Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

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COAL AGE

With which is consolidated "The Colliery Engineer" and "Mines and Minerals"
R. DAWSON HALL, *Engineering Editor*

Island Creek Number

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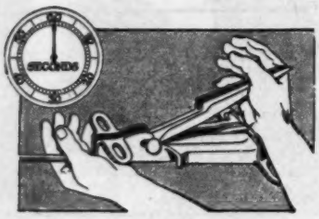
And Now, After 75 Years—

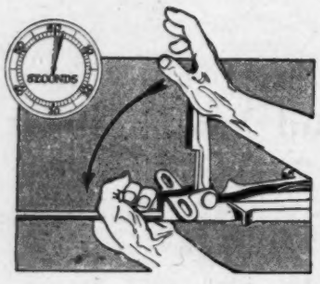
THREE GENERATIONS have mined coal from the same seam down in the Georges Creek region of Maryland. What those three have done gives an interesting cross-sectional picture of the advances coal mining has made from generation to generation. The story makes a strong answer to that old crack: "Coal mining hasn't changed in a century."

The grandfathers of Lonaconing, Md., mined 30 per cent of the good coal in the Big Seam. The fathers came along in the '80s and '90s and raised the percentage to 50 or 60. And now come the sons in 1925 taking out the balance. Each succeeding generation recovered what the one preceding had left as "unrecoverable." The story of the present generation is one of triumph over tremendous obstacles by pillar-recovery methods applicable almost anywhere, East or West. It is told in next week's *Coal Age* by Elkins Read, general superintendent of the Maryland Coal Co.

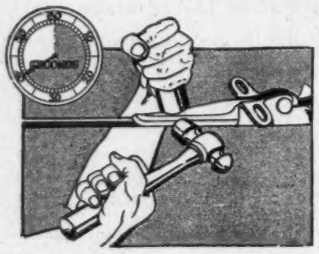
THE REPORT OF THE American Institute of Mining and Metallurgical Engineers' meeting in Salt Lake City, carrying some sound ideas to the coal industry, appears in next week's issue also, along with the regular features which make this magazine a good right-hand man to those who direct the work of getting out the nation's coal.



1 The tip is inserted, up-side-down, under the hooks cast on the frog body.



2 It is raised up, over and down onto the wire. The cam end forces wire down into groove.



3 The lips are clinched around the wire, the whole job on one tip taking about 40 seconds. No nuts or bolts required.

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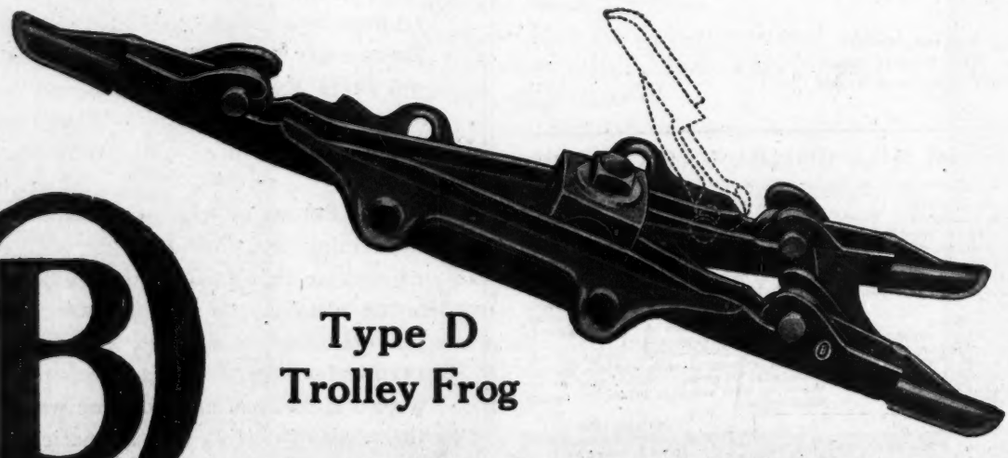

Type D Trolley Frog

O-B TROLLEY MATERIAL

COAL AGE

McGRAW-HILL COMPANY, INC.
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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 28 | NEW YORK, SEPTEMBER 10, 1925 | Number 11

Island Creek

THIS IS THE ISLAND CREEK number of *Coal Age*. The story of how Island Creek Coal Co. has grown in technical, physical and economic importance in the world of coal is presented in the leading articles of this issue, not because that company is a paragon of coal operating virtue but because it has risen so strongly over faults and handicaps that have consigned many another such organization to mediocrity.

Vision, vigor and the application of keen intelligence have done much from 1902 forward to make Island Creek Coal Co. one of the most consistently profitable coal properties in the history of the industry. Favorable natural and labor conditions do not account wholly for this. Method is in part accountable. Coal men everywhere who are reaching out for management and operating ideas that will improve their own businesses and thus help in today's advance of the coal industry to a higher plane of efficiency will eagerly read the pages of this issue to learn Island Creek method.

No Disagreement, but—

A FEW YEARS AGO the conservatives of the United Mine Workers saved that organization from the folly of an out-and-out declaration in favor of the nationalization scheme imported from Russia via England by referring the question to a special committee for further study and report. A few days ago the subject so dear to the radical dreamers and the addled-thinking "economists" whom Ellis Searles so aptly dubbed Greenwich Village coal diggers was again dragged forth by energetic newspaper reporters eager to brighten up a humdrum story of the anthracite deadlock.

John L. Lewis has been prompt to disclaim responsibility for the resurrection. The stories "reviving discussion of the theory of nationalization of the coal industry," he states, "do not originate with the mine workers." John Hays Hammond, declares the president of the United Mine Workers, must bear the onus because the chairman of the United States Coal Commission "has been haunting the lawns of White Court, pestering the President" to abandon the traditional government policy of non-interference with business and establish a semi-regulation of the anthracite industry. "It is obvious," Mr. Lewis sagely remarks, "that any legislation enacted by Congress dealing with anthracite must similarly be superimposed upon the bituminous industry." Such regulation, Mr. Lewis has indicated both publicly and privately, is not advocated by the United Mine Workers.

With the federal operation of railroads still a vivid memory and the Shipping Board mess a constant reminder of what happens when the government undertakes to step out of its natural sphere, only a minority would favor regulation of either branch of the coal industry except as a last alternative. It is cheering, therefore, to find such an influential ally as Mr. Lewis lifting his voice in protest against renewing consideration of the perpetration of that economic crime. It would be more encouraging, however, if Mr. Lewis was not exercising his control over the coal industry in such a way that many otherwise sober-minded citizens are driven to believe that what he denounces offers them their only relief from his tyranny.

Mr. Lewis breathes brave words against regulation, but his actions are the strongest support of the school he condemns.

Maintenance and Success

WHEREVER WE FIND coal properties which stand out as efficient profit-making producers, such as the Island Creek mines described in this issue, we invariably soon observe that unusually good supervision and care is given the mining equipment. In these days one hardly need argue that low-cost operation should go hand in hand with the use of labor-saving equipment. But, strangely enough, although most men admit that the success of a mine depends largely upon the amount of equipment it uses, they forget that poor maintenance and careless operation limits the usefulness of apparatus and profit it can make.

If it is worth while to invest a large amount of money in a machine, why isn't it also worth while to insure its continued operation and success by providing adequate repair facilities?

Breakdowns and delays to haulage systems often tie up production in a section of a mine employing many men who must remain idle until service is restored. A main hoist or power substation failure may shut down a whole mine for a day or more. Only by regular inspection to avoid such accidents and by providing sufficient repair parts can a mine hope to be able to pay its overhead for every day it is in operation.

Consumers and the Safety Problem

SUCH A MODERATE USE of rock dust as does not invade the rooms probably will not greatly affect the sale of coal. The public, however, will view with disapproval any dustiness of product where the dust does not resemble fuel and some difficulty may be experienced in disposing of the ribs and stumps of entries, where they still retain a heavy coating of rock dust. However, this coating could be washed off with a hose before shots are fired. Where extensive sprinkling is done and fine coal adheres to the large lumps the retailer complains, for he finds he has more screenings. The consumers find that they have a dusty coal. Thus the public is offering some resistance to modern safety methods.

The coal might be washed down after being prepared. After all, such a washing of the lumps, six or eight inches in diameter or larger will not add much moisture to the coal for what water is applied will speedily run

off; but with the smaller sizes, or with run-of-mine it will result in shortage of weight, the railroad weight of coal and water not coinciding with that of the dry coal when it is received. Fortunately in these cases there is less objection to adhering fine coal and consequently washing down fine sizes will not be necessary.

From the Courthouse Steps

DAY-BY-DAY SALES of coal mining property in sheriffs' hands during the summer was not a healthy thing for the coal industry. The effect that this sort of thing is bound to have on certain coal markets during the next year or so while margins on coal are slim cannot be overlooked. In sections of Kentucky sales from courthouse steps have put some bargains into the hands of buyers. A property valued at $600,000 sold for a mere $32,000. Another which sold less than two years ago for $250,000 went off the auction block at exactly one-tenth its value. There are others. The list is long.

The buyers probably can afford to operate these properties successfully even though the previous owners went broke trying to do it. The new holders' investment is so small that their depletion charge, interest on bonded indebtedness and other capital charges are practically nothing. The advantage this gives these companies in the market may be enough to completely undermine nearby markets upon which other and more regularly financed mines depend for their outlet. Thus the much heralded law of the survival of fittest which is supposed to be operative with especial effect in the coal industry, produces strange results.

Score: Yellow Cab, 67; Coal, 23

MEN HONESTLY striving to overcome natural obstacles to efficiency in coal mining are irked by the high marks set up in certain other industries whose problems are not comparable to coal's. Take Eugene McAuliffe for instance. Mr. McAuliffe stands at any hour on the curb of almost any busy city street in America and witnesses the ant-like industry of the ubiquitous Yellow Cab. It never seems to quit work. Mr. McAuliffe ponders. Then, with his customary mental vigor he gathers up statistics on the Yellow Cab, compares them with statistics of coal mining, and, in his *Union Pacific Coal Company Employees' Magazine*, deals coal another black eye.

He says that John Hertz, the founder and, for 10 years, the actuating spirit of the Yellow Cab does what he does in the city streets of the land "by efficient organization expressed in good equipment, well maintained, and thereafter used. Before the recent collapse of the coal mining industry the average working year was 215 days out of 308, or on the basis of 8 hr. per day, 1,720 hr. per year. In Chicago the Yellow Cab Co. averages 16.2 hr. actual service per day, every day in the year, but eliminating holidays and assuming a year of 308 days, its cabs would operate 4,990 hours, or 290 per cent of the average mine year. Ninety per cent of the cabs are always ready for service, the peak demand coming at 1:00 a.m. Sunday (Saturday night); 70 per cent are double shifted; the cabs average 50,000 miles a year and last on an average three years.

"Our mines and mine equipment are employed about 23 per cent of the year (excluding holidays), while John Hertz's cabs keep busy 67 per cent of the time. Naturally it is a far step from coal mining to wiggling a cab through the streets of New York or Chicago, but the Hertz performance was developed in 10 years. The mining industry is now about 750 years old and efficient mechanization is just coming in, while the work year has gone back. We want more of the John Hertz mental attitude in the coal industry; such would mean better earnings, safer employment, happier men and cheaper coal."

True enough. We certainly do want more dauntless men of mental keeness in coal. The industry needs their stimulus, the mining art their freshness of vision. However, Mr. McAuliffe surely recognizes that severe limitations which Nature has fixed inflexibly upon underground mining makes it essential that efficiency of the coal industry be measured on a different scale from that of the Yellow Cab. The cab does not run continually in a low and caving tunnel. Its roadways are maintained for it by others. It can travel where it pleases. So long as it runs at all its income is up to standard. Can coal do that?

Raw-Material States Suffer

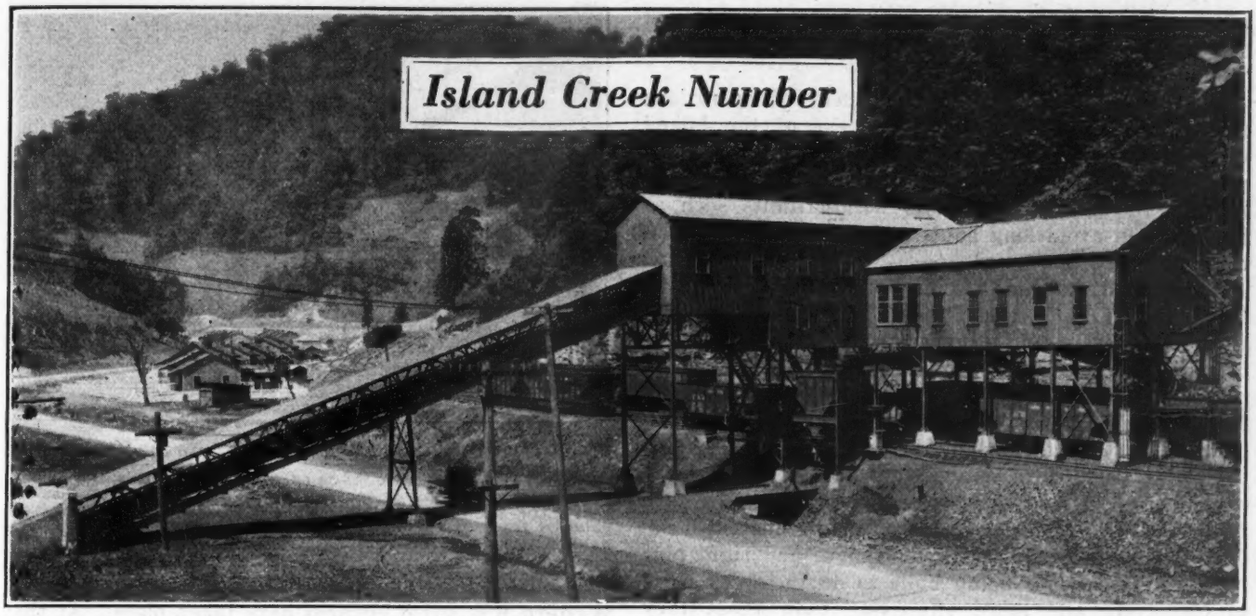
IN A RAW-MATERIAL country capital seems to drift almost inevitably to the industries producing that raw material. Manufacturing gets only a passing consideration, and, consequently, in a state like Pennsylvania or West Virginia we see coal and iron traveling away to be used at distant points and the products of those raw materials being brought back after having paid transportation both ways. This is neither economical nor desirable, but it seems almost inevitable, constituted as we are.

Part of the overdevelopment of mineral resources comes from that very fact. The genius of the inhabitants of raw-material states is directed solely to that development. No matter how greviously the industry may have suffered or may be suffering, somebody is looking for an opportunity to open new mines, usually some impecunious person who cannot hope to compete because he cannot equip his mines adequately.

Utah, for instance, is suffering just now from the obsession. It is said that the state is cursed with too much coal. In Carbon County everyone has his eye on a coal mine rather than on the one hundred and one other possibilities, that would make Utah a well-rounded state.

Resting on only two or three industries, all based on raw-material production, any community has an extremely uncertain existence. When the particular raw materials are not wanted, business is dull to utter stagnation. No other place of employment or investment is open, and the towns waste away. Even the railroads, having nothing to haul, lay off men or give them short time.

Diversified industry is needed as much as diversified farming. We rebuke the cotton farmer for hauling in oats, wheat, corn and hay that he could grow on his own acres. We chide him for excessive anxiety to increase his cotton acreage in the face of the weakness of the cotton market, but the coal industry is no better. It develops far too many properties that should remain untouched. Let capital go into coal mining without limit, so far as it increases efficiency, but let it not be wasted in cheap, inefficient equipment that gluts the market while not lowering the cost. And above all, let it visit no more grief upon regions already overdeveloped.



Would You Increase Tonnage and Reduce Costs? Island Creek Has Done It

Careful Division of Area Among Mines of Large but Not Phenomenal Size—More Inspection and Less Repair — No Substitution of Coals—Towns to Attract More Desirable Men — Houses, Mines and Offices Easy of Access

By R. Dawson Hall
Engineering Editor, *Coal Age*,
New York City

NOT WITHOUT some basically correct principles of management and operation could the Island Creek Coal Co. of Logan County, West Virginia, have arrived at its present large production. Its mines will possibly produce this year more coal than those of any independent bituminous coal company. There must be some reason for this rapid rise to leadership, and it will be my endeavor to set down the cause of the growth of this company since 1902, when it started mining on a small scale at Holden in the heart of Logan County.

One of its prime principles relates to selling. It sells direct to the consumer, and it confines its business to its own coal. In consequence, it is not subjected to the loss of reputation which a producer of a good product inevitably sustains when some other coal is substituted for its own. All its business is done with coal that it knows is good and dependable, from beds that it is sure are clean, mined by men under its own supervision, carefully prepared and picked on its own tipples. As a good reputation is the basis of all successful business, it is not well to have other persons substitute inferior coal for a standard product nor is it advisable to do as is the practice of some operators, to ship fuels of other companies and from other mines and seams in place of their own. In short, the Island Creek Coal Co. does not itself substitute nor give others an opportunity to do so.

The tipple and slope at No. 1 mine are shown in the headpiece. The gallery and the slope shelter a belt conveyor 285 ft. long.

An operating principle that the Island Creek Coal Co. has adopted to its great advantage has been to divide up its field in carefully planned areas so as to minimize haulage, electrification and ventilating costs. Each mine has its predetermined area and each area is of a size appropriate to the physical conditions. The division of the whole field has been made easy by the many narrow valleys which give ready access to every coal section, though in some of them the Island Creek seam does not outcrop.

The Island Creek Coal Co. is not seeking to make big records for single mines. It is willing to leave that honor to other operators. Large gross tonnage from a suitable number of mines at a correct mining and transporting cost may not make headlines but seems more likely to, and actually does, produce dividends, certainly under Logan County conditions. Do not believe, however, that the company favors the operation of small mines in large numbers. Its largest mine is now producing 65,000 tons a month, and its newest operations, Nos. 20 and 21, are designed for a maximum daily output of 4,000 tons, quite a sizeable production even in these present days. In fact, whereas in 1923 the Island Creek Coal Co. produced 3.1 million tons of coal from nineteen mines in the Island Creek seam, in 1924 it had concentrated its activities to twelve mines and yet produced nearly 5 million tons. It found that the efficiency in operation was correspondingly greater, and at present it is mining at the rate of over 6 million tons with greater ease and a

lower cost per ton than before. So the Island Creek company is an exponent of the value of the slogan "Better and fewer mines."

But such a practice of enlargement of operations reaches a limit, and the management of the Island Creek mines believes that a 4,000-ton-per-day mine is preferable for favorable conditions such as theirs. By keeping the size of its plants within limits such as these, it can avoid long hauls and simplify its ventilation problems.

Traveling from mine to mine one is impressed with the fact that the Island Creek Coal Co. is a believer in modernization and believes in it not alone in the restricted sense that when it starts a new mine it should make it the last word in mine construction. Shafts Nos. 20 and 21 are probably the most interesting installations of the company, and they are new, but all the plants are modern because they have been diligently modernized. A long series of reconstruction jobs have made available every new form of production help. Old tipples have been replaced by new, and right now two new tipples are being built to do the work more inexpensively and more effectively than those they replaced.

When the slopes at several of the mines were first driven they were timbered, but coal dust tended to collect on the collars and the management feared that this dust would create an explosion hazard. In consequence the slopes have been lined with concrete. Underground equipment is constantly being replaced and supplemented. Notable changes of this kind have been the recent installation of about 2,000 low-type steel mine cars equipped, like every car on the job, with roller bearings. The use of electric coal drills is another evidence that the Island Creek company is not behind-hand in its modernization program. These are only a few of the ways in which this company has brought its operations abreast of the times.

And we have here by no means a company without a past. It has had time and plenty of opportunity to grow moss-backed and time-worn but it lacked the disposition.

Since 1902 when ox teams laboriously hauled equipment over the mountains a distance of eight miles from

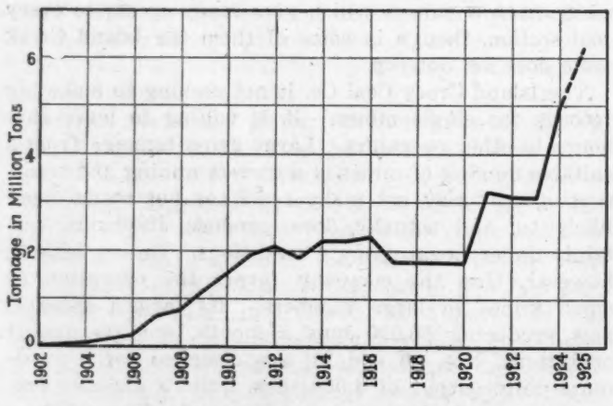


Fig. 1—Production Curve of Island Creek Coal Co.

The sag in the curve between 1916 and 1920 marks the period during the war and shortly thereafter when labor was scarce and car supply limited. The straight line between 1921 and 1923 marks the period during which markets were being readjusted. The rapid ascent between 1923 and the present day shows how the last readjustment of the market has increased the production of this company. At the beginning of 1923 the company had nineteen mines in operation; during 1924 and 1925 only twelve have been operating and yet the production has been growing rapidly. This sharp rise is a striking example of what modernization will do.

Fig. 2—Out from the Cool of the Mine Into the Summer Sun

Loaded trip leaving No. 18 mine. The train consists of twenty low-type mine cars of 2½-ton capacity hauled by a 15-ton locomotive. The seam at this mine lies 189 ft. above the level of the railroad track at the tipple. One of the few mines of the company where the cars come to the surface.

the village of Dingness, W. Va., on the Norfolk and Western R.R. great changes have taken place. At that time a saw-mill was constructed which cut down the merchantable timber. It continued its operations till 1919. As one looks at the hills one hardly realizes that the work of lumbering is completed. They are still verdure-clad and as picturesque as ever.

The company gradually acquired a large acreage and opened new mines, its growth being slow because of lack of railroad facilities, though by 1910 it had seven mines and an output exceeding 1½ million tons yearly. At the close of this present year the company will have mined altogether from all its nineteen mines, past and present, over 44 million tons.

At present, the company has in fee simple 27,000 acres of coal land, all in one large tract. It is estimated that under this property are about 215 million tons of coal in the Island Creek seam, 82 million tons of coal in the Draper seam and 60 million tons in the Eagle seam. To date mining has been confined entirely to the first-named bed.

A liberal policy with regard to labor has been characteristic of the Island Creek Coal Co. It has recognized that any company, that would expand, must have villages and living conditions that would attract the better kind of labor. Only trouble can be expected if the towns in which the men are housed are of the kind that men of orderly habits and high ideals shun. The Island Creek villages have not only scenic beauty but comfort and neatness. The man who lives in them can say "good-bye" to the pioneering life with its hardships.

With no less than 290 actual working days in the year; with a system of ten schools which have the highest rating in Logan County, the funds of which are augmented by the company, so that they run nine instead of eight months; in an almost urban community comprising 10,000 persons, all of whom dwell in and around Holden (a community for the welfare of which the company holds itself responsible) with good water supplied by four water filtration plants of a combined capacity of 324,000 gal. in 8 hr. the employee of the Island Creek Coal Co. rightly feels he has ideal conditions. The best men and the largest supply of men can be obtained by an operating policy such as this.

Reverting to the filtration plants it may be said that

the largest is at Holden. It has a capacity of 200,000 gal. in 8 hr., the water being pumped from the Right Fork of the Main Island Creek. The water is treated by the use of chlorine, soda ash and alum and then filtered and piped to the houses. Fire plugs are distributed as needed to guard against fire, aided by a fire truck which gives a pressure of 350 lb. per square inch. The town of Holden also is provided with fire-alarm boxes.

In all the villages some means of sewage disposal has been provided. Wherever the practice is convenient and safe, the sewage is discharged into the creek. In other places it is piped to septic tanks. In Holden the streets are paved and in lesser communities hard roads or their equivalent have been provided. Sidewalks have been laid where needed and street lights are everywhere installed. All lots are fenced.

To make possible the quick delivery of lighter materials from storehouse to mine, to aid officials and doctors in making their rounds, to accommodate its mine workers and to prevent the tracking of dirt into their houses as well as to benefit the county at large, the company, in 1923 and 1924, graded and constructed ten miles of 16-ft. concrete roads at a cost of $675,000. Without good roads the mines, even though reasonably close to one another, are not readily accessible for the visits of officials, especially in rainy weather. How near the mines are to each other can be judged

Fig. 3—Map Showing Holdings, Mines, Villages and Power Lines of the Island Creek Coal Co.

The outcropping areas on the right in time will give place to the deeper mines on the left. These mines have been apportioned larger areas because, where the coal is deep, fewer and larger mines are desirable and economical. Where the crop divides a coal field into small areas, it is useless to spend money in providing a huge output which could only be attained by the time the area readily available was about worked out. But in deep-lying fields, the cost of sinking slopes or shafts and the expenditure for conveyors or hoists make it profitable to put in fewer plants and those of large capacity.

Fig. 4—Rock Dusting in No. 20 Shaft Mine

The Island Creek Coal Co. is not passing up anything new which is likely to make its mines more safe. Lately it has gone to rock dusting. It is now rock dusting the haulage entries in its shaft mines and will extend this activity to all of its operating mines. It will further guard against coal-dust explosions by erecting rock-dust barriers at the necks of room panels. Here is shown a cement gun being utilized for distributing rock dust.

from the general layout map of the property (Fig. 3).

With good roads, frequent, even daily, visits by the general manager and his operating and engineering assistants are possible. Radiating from Holden and leaving the main thoroughfare between that town and Logan, the county seat, are a number of branch roads which reduce to a minimum the distance by automobile from any settlement on the property to either of these towns. Most of the miners employed by the Island Creek Coal Co. own automobiles, so that they may enjoy the activities of the larger towns.

Repair men from the mechanical and electrical departments making headquarters at Holden all travel to and from their work in automobiles, the roads having made feasible the erection of a large central shops building where repairs can be made uniformly under the watchful eyes of the departments. Speedy transportation of supplies by trucks has enabled the company to operate efficiently with only a small stock of repair parts at any one mine.

Like all successful companies the Island Creek Coal Co. lays more stress on inspection than on repair. With any other plan there can be no continuity of operation. And for that inspection the company vests the authority in the equipment-maintenance department and not in the mine officials. Let us consider a few examples of the way in which this plan functions.

As far as condition is concerned, there is no difference at the Island Creek mines between an old and a new machine. As a result, cutting crews are not anxious to get a machine newly arrived from the factory and are not allowed to make such a choice, for there is no difference in operating efficiency between it and any other machine. Frequent inspections and prompt attention to defects keep equipment up to standard, and the cutting operations are closely watched by the equipment-maintenance department, the cuts themselves being inspected to ascertain whether the machine runner has been using dull bits.

The electrician at each mine thoroughly inspects every cutting machine on the job at least once a week, the inspection being made in the motor barn where facilities are provided for the making of all necessary adjustments. In addition, the machine runner inspects and adjusts the machine daily and each day makes out a daily report with a copy as to the condition of the machine. These he hands to the night boss, who in turn passes the report to the mine electrician and gives the copy to the mine superintendent. If the machine needs repair it is taken immediately to the motor barn. Electric coal drills are stored during the off-shifts in the same place, where they are inspected each day and the necessary repairs made.

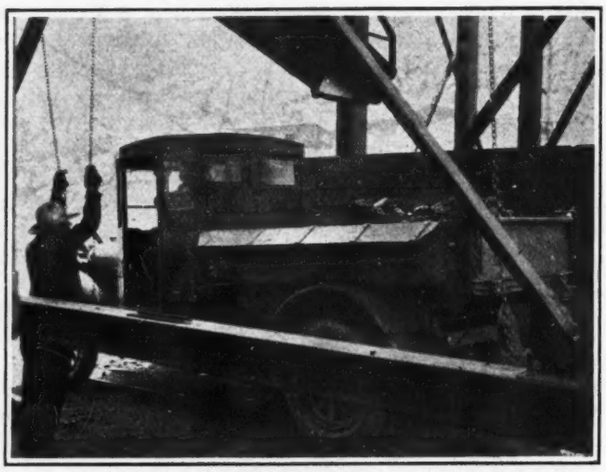


Fig. 6—Automobile Truck Disposes of Mine Refuse

What little mine refuse is brought to the outside from the interior of the Island Creek Coal Co. mines is hauled away in automobile trucks, introducing a novel use for this type of vehicle at the mines. This scheme is the least complicated and the most economical for the disposal of small quantities of rock which are dumped over the banks of the roads.

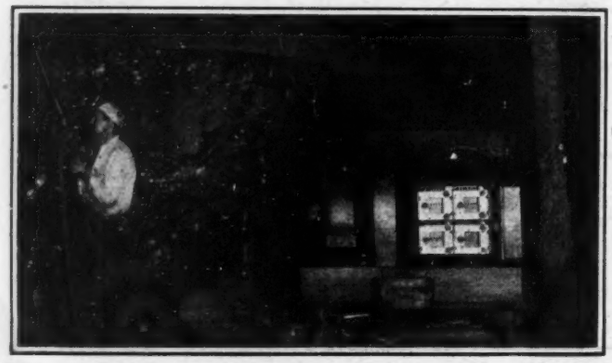


Fig. 5—Air Drill Breaking Roof for Overcast

Directly over the coal seam in these mines is a bed of hard massive slate which is broken only with the greatest difficulty. Consequently for the building of overcasts a portable compressor is hauled to the job and thereby a difficult task is made comparatively easy.

Only once, and only at one mine, in a period of twelve years during which many mines have been operating, has a day been lost by reason of fan trouble. This continuity of fan operation can be attributed solely to the care with which the fans are inspected for defects and the promptness with which any fault is corrected. Each fan is inspected once a week by the alternating-current electrical department.

Coal Age has already outlined the scheme of tipple inspection which provides comparative freedom from breakdowns of tipple equipment. For full details the reader is referred to the May 7 issue, p. 678.

The authority of the mine superintendent or mine foreman does not extend to the mine electrician. The latter reports to the head of the direct-current electrical department by whom all of his orders are given.

The company insists that all rooms and entries be driven uniformly wide and straight and in adherence to

its standard plan of mining. The work of every eighteen or twenty loaders is directed by a straw boss. As the rooms and headings advance, center lines are painted on the roof, the lines being extended by a center boss and helper with each advance of one cut. Surveying corps report the finding of all off-center places to the superintendent and the general superintendent. A mine inspector is employed; he reports directly, and only, to the general superintendent, who promptly acts upon the inspector's suggestions.

The Island Creek Coal Co. prepares its coal with great care, as is instanced by the fact that it requires that each railroad car shall be carefully swept before it is loaded. It is anxious to maintain the appearance as well as the quality of its coal, and any lump which has a luster inferior to that of the bulk of the coal is rejected, even though its analysis may measure up to that of the average. At the Island Creek mines all the coal is screened, even the run-of-mine, because only by screening is it possible to pick out the impurities in the coal of larger size. When run-of-mine is shipped it is made up of the assembling of the sizes after the impurities have been removed on the picking table.

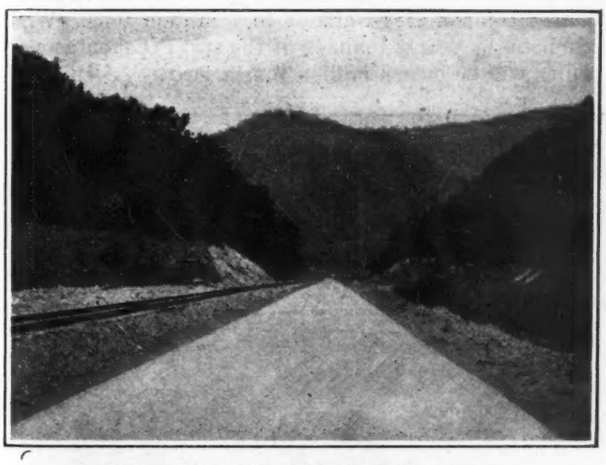


Fig. 7—How Island Creek Builds Roads

Without easy communication no business can be conducted profitably. A primary need of efficiency is good roads. How many companies never achieve success because they fail to provide road facilities and become buried in the ruts and mud holes that inevitably form in dirt roads? Island Creek has spent $675,000 in highways like this.

Though it is a fact that the Island Creek mines have had a good record for safety, the company is making a concerted effort to increase the safety of its workers. It is acting as far as it can through its employees in the work it is doing in and about the mines and throughout the property. That part of the program of safety in which the employees have not, as yet, concerned themselves is shouldered by the company. But by continual education, example and training the company is extending the control of employees in the safety campaign.

Perhaps the strongest link in the chain of safety at these mines is the safety clubs. Mention of their method of functioning was made on p. 873 of the June 11 issue of this magazine. A few additional remarks relative to their purpose and practice are appropriate at this point. The safety clubs were organized, as indicated by an excerpt from the rules and regulations governing them, "to protect the employees of the Island Creek Coal Co. from accidents in and around the mines and to promote a system of first-aid training that will

Fig. 8—Even the Railroad Is Attractive at Holden

By laying a sidewalk and erecting an iron fence on either side of the railroad tracks this thoroughfare for travel on foot has been made safe. The scene is enhanced in beauty by the hedges and trees.

enable the employees to look properly after the health and comfort of their fellow workers."

Obviously it is an organization of employees, over which the company assumes no control. Each mine has its own club presided over by the superintendent as president and the mine foreman as vice-president. Meetings are held every two weeks by the several clubs to discuss accidents and means to prevent them. Failure of any employee to attend at least one meeting a month subjects him to a fine. Any employee who violates the company rules or state mining laws is fined 50c. for each such act by the club and is further open to prosecution by law.

Safety police are elected by the club for one month. Their duty is to detect unsafe practices. They present their cases at the meetings of the club, and the members collectively pass judgment. So wide flung is the authority of this club that if an employee is caught speeding his automobile on the property he is convicted for that act by his associates.

Every man on the payroll has received a 15-hr. course in first-aid training given by the U. S. Bureau of Mines. In addition a first-aid team of six men is maintained, and at least ten men have been trained in mine-rescue work at each mine.

Another company with the same executive officers and many of the same directors is the Pond Creek Pocahontas Co. which owns the entire stock of the

Fig. 9—Experienced Man Watches Center Lines

The management does not rely upon a mine boss to keep places properly centered. It employs center bosses whose job it is to extend the lines by sighting from one plumb-bob cord to another, all of which are suspended from roof spads at stations definitely established by the surveying corps. In the illustration the center boss is holding up the safety lamp merely to light up the cords. A helper who stands at the other end of the line assists him in ascertaining directions.

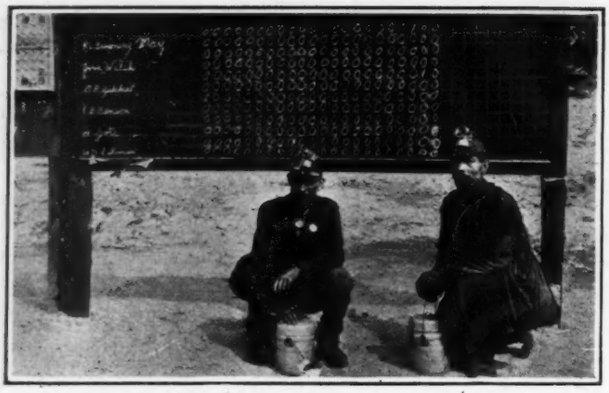


Fig. 10—Score Board Where Naughts Are Popular

Here are listed the names of the assistant mine foremen and the number of accidents in No. 1 mine day by day in the sections over which they have control. Opposite each name are two lines or squares. In the upper are listed minor accidents and in the lower, those that are serious.

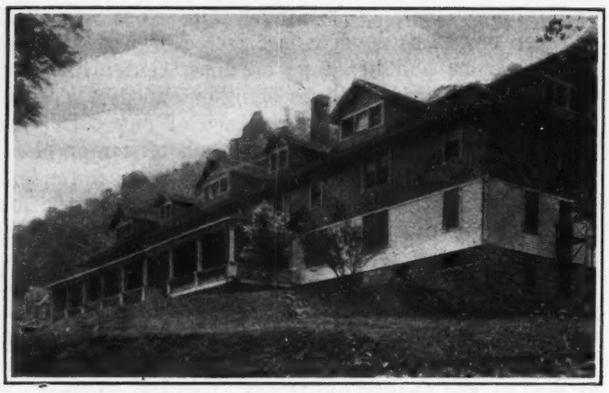
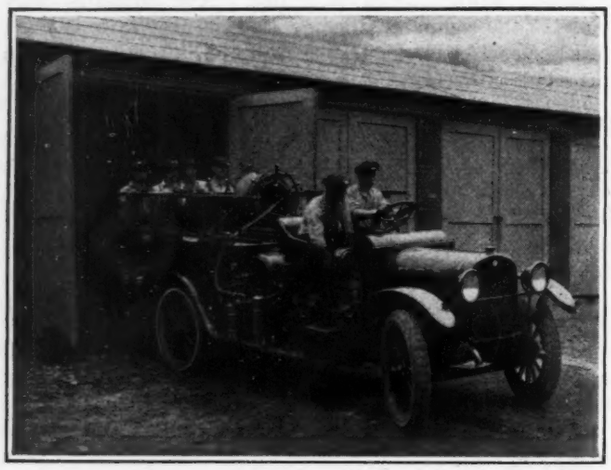


Fig. 11—Holden "Club" Is Well Worthy of Name

A cheerful, restful spirit pervades this club house. Such places are built not so much of lumber and stone as of human lives, and the Holden building has not only good structural material but good human material also, to make the club a real home. The Holdenites are quite proud of this building.

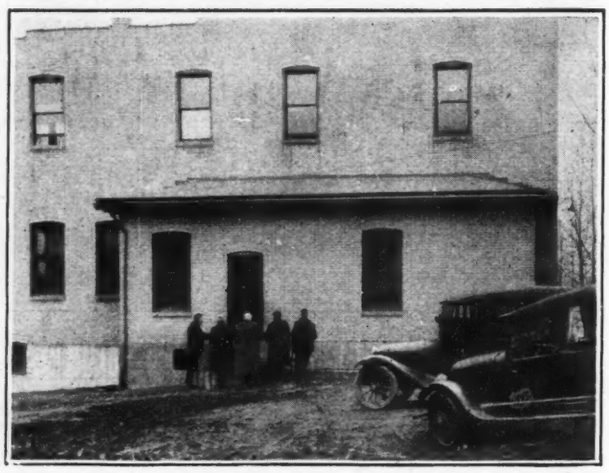
By-Products Pocahontas Co., its coal being sold by the Island Creek Coal Co. The Island Creek and Pond Creek Pocahontas coals are of a different character, the former having more volatile matter than the latter. The Bartley shaft at the Pond Creek Pocahontas Co. is only starting operations but is expected to produce 400,000 tons during the current year.

By-Products Pocahontas Co. will ship about 225,000 to 250,000 tons this year, so that the two properties will provide a tonnage of from 625,000 to 650,000 tons, which will bring the production of the entire aggregation of companies up almost to 7 million tons. When complete the yearly tonnage of the two Pocahontas companies will be over a million tons a year.



Another Case Where Roads Pay Dividends

Fire truck and men at Holden. It is good practice to house the fire truck close to the shops and to pick a crew of fire fighters from the men who work there. With this arrangement no time is lost in getting to the fire. This apparatus develops a water pressure of 325 lb. per square inch.

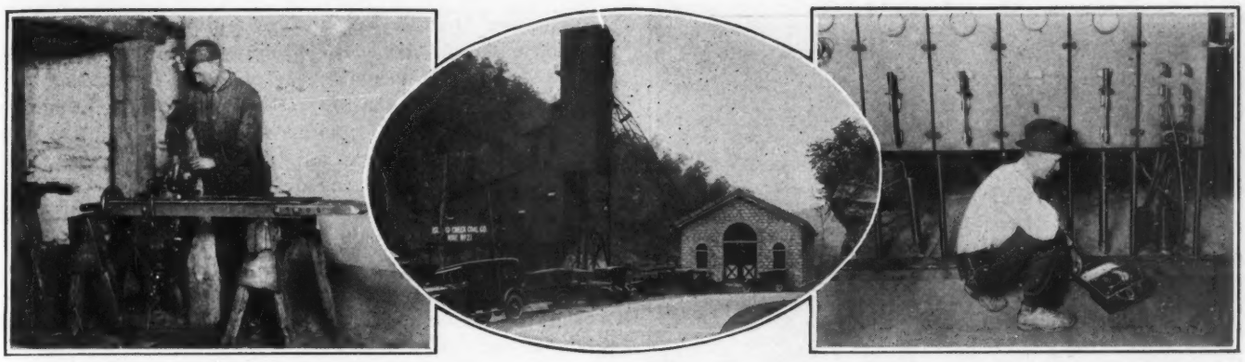


Charity For "Unsafe" Men

Such a scene as this is enacted every pay day at almost any mine office. These unfortunates are victims of mine accidents resulting from the carelessness of themselves or others. Most of the miners, as they file from the cage, pay envelope in hand, contribute to the cripples waiting in line outside of the door.

Headed for Market

This is the day's output from Island Creek Mine 17 halted for purposes of photography only and not because this bull of an engine is stalled. The production of the 12 Island Creek mines in Logan County, W. Va. has been mounting steadily since the company made its 85,000-ton start in 1902, until this year it is expected that the total from the 12 will reach 6,000,000 tons.



"System Without Red Tape" Keeps Costs Down

Rigid, Regular Inspection and Reports Point Out the "Stitch in Time"—Central Metering Cuts Power Bills—Standardization Holds Repair Stocks Low but Ample

By J. H. Edwards
Associate Editor, *Coal Age*
Huntington, W. Va.

AT A GROUP OF MINES so completely electrified as that of the Island Creek Coal Co. of Holden, W. Va., the work of installing, supervising, and maintaining electrical and mechanical equipment holds an important place among factors essential to low-cost production. The use of equipment best adapted to the conditions, and the proper maintenance of that equipment are important, not only because of the direct relation to operating cost, but also because, indirectly, they help to increase coal production.

The group consists of twelve operating mines—five drift, five slope, and two shaft—all in the Island Creek seam. The coal which is a high grade bituminous of hard character, averages about 76 in. in thickness and contains a parting of 1 in. to 2 in. of slate. Generally speaking the bottom and top are good and there is a comparatively small amount of water to be pumped from the mines. Very little gas is encountered, open lights being used even in the two shaft operations. The seam lies practically horizontal, and there are no natural grades of sufficient steepness to limit in any way the use of electric locomotives for gathering and hauling.

All coal is undercut with electric machines, loaded by hand into 2½-ton mine cars, and gathered by cable-reel locomotives. Excepting the hand loading, the mines are completely electrified for hoisting, for driving pumps and for ventilating.

The most outlying mine of the group is only 4 miles by good road from operating headquarters at Holden where the warehouse, and repair shop are located, and 5 miles from the point of central metering of power. This power is purchased at 6,600 volts from the Kentucky-West Virginia Power Co. and transmitted at that voltage to the various mines over pole lines owned and operated by the coal company. There is a total of 18 miles of this line in use.

The headpiece shows the top works of Mine 21, one of the two Island Creek shaft mines. It was completed in 1923 and may attain a daily production of 4,000 tons. At the left is shown an inspector examining an electric drill which has been left by the operator in such a position that one man can give it a test without aid. At the right H. L. Bradshaw, chief electrician of the alternating current department checks the voltage at a mine substation.

In order to provide further insight into the general conditions, a few figures on power consumption and production are given in Table I. The kilowatt-hour data includes all power used not excepting that for house lighting and other outside-of-mine purposes.

Table I—Relation of Electrical Energy and Tonnage at Island Creek Mines

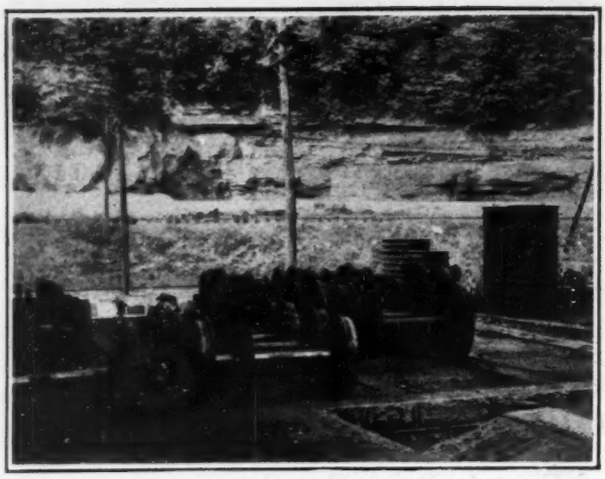
Period	Kw.-Hr.	Tons Mined	Kw.-Hr. per Ton
All of 1924	16,300,000	5,000,000	3.26
Oct., 1924	1,460,000	520,000	2.81
First 5 months of 1925	7,100,000	2,300,000	3.08
Average for 21 mines of over 10,000 tons per month capacity, all 100 per cent electrified and in the same general territory as the Island Creek mines			4.66
Highest of the above			7.91
Lowest of the above			2.36

Here it may be well to explain that company houses are provided for practically all employees. It will be noted that the kilowatt-hour-per-ton figures in the table are considerably less for the Island Creek mines than is the average for a number of other West Virginia mines of about the same capacities.

The Island Creek mines vary in capacity from 1,000 to 2,700 tons per day, and the total consecutive daily production is approximately 22,000 tons. This latter figure divided by 3,890 (the maximum average 5-min. demand) gives 5.65 tons per day per kilowatt. As a comparison, a 2,200-ton mine in the same coal field gets only 3.255 tons per day per kilowatt of 5-min. demand. This indicates the advantage that a group of mines such as the Island Creek properties gains by central metering of purchased power.

For a company which has been operating and developing mines for over twenty years, the equipment of the Island Creek is highly standardized. The desirability for standardization is given important consideration whenever anything new is to be purchased, but must naturally take second place when improvements are offered which are of distinct advantage.

On the outside equipment, alternating-current motors are used exclusively, these being of a few standard sizes, so that a small stock of bearings gives protection against the only trouble common with this type. The direct-



Orderly Storage of Wheels, Axles and Tires Is Noticeable Around All Island Creek Mines

current substations, which in every case are located outside of the mines, are equipped with synchronous converters of 200- and 300-kw. sizes and of two makes. The standard direct-current voltage is 250; however, four of the older mines are still using 500-volt pressure. Squirrel-cage motors of both the one-speed and two-speed types are used for driving the mine fans. No synchronous motors are in use, yet the power factor at the central metering point averages 80 per cent. Inasmuch as there is no power factor clause in the rate schedule there is no need for correction.

Assuming that all locomotives and mining machines are in use each day, the efficiency measure is 1,100 tons per haulage locomotive, 256 tons per gathering locomotive, and 286 tons per mining machine. Roughly 10 per cent of these locomotives and machines are not in use but are serving as spares. This makes the actual tonnage per working unit higher than the figures here given. None of the equipment is double-shifted. The length of the shift is 8 hr.

In order to get large tonnages the Island Creek company keeps on hand a complete supply of repair parts so that only in unusual instances is it necessary to shut down a piece of machinery to await the shipment of repair parts from the factory. Table II lists the totals of the five principal classes of repair parts kept in stock in the central warehouse.

The value of stock on hand at the warehouse is

Table II—Repair Parts of the Five Principal Classes Kept in Stock at the Central Warehouse

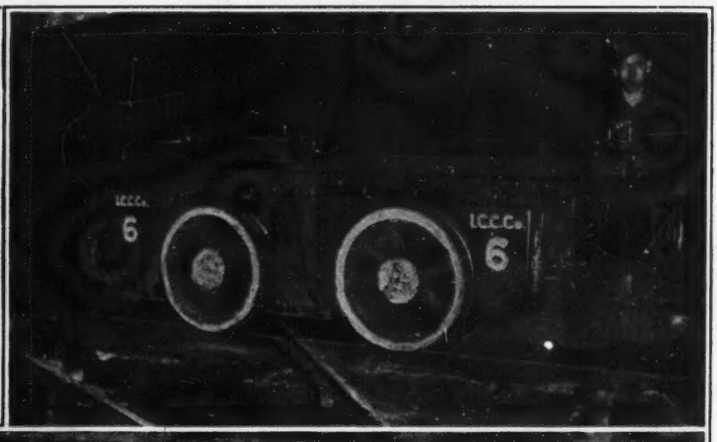
For mining machines	$26,036
For locomotives	36,654
For tipples	11,813
For pumps	4,763
For drills	3,346
Total	$82,612

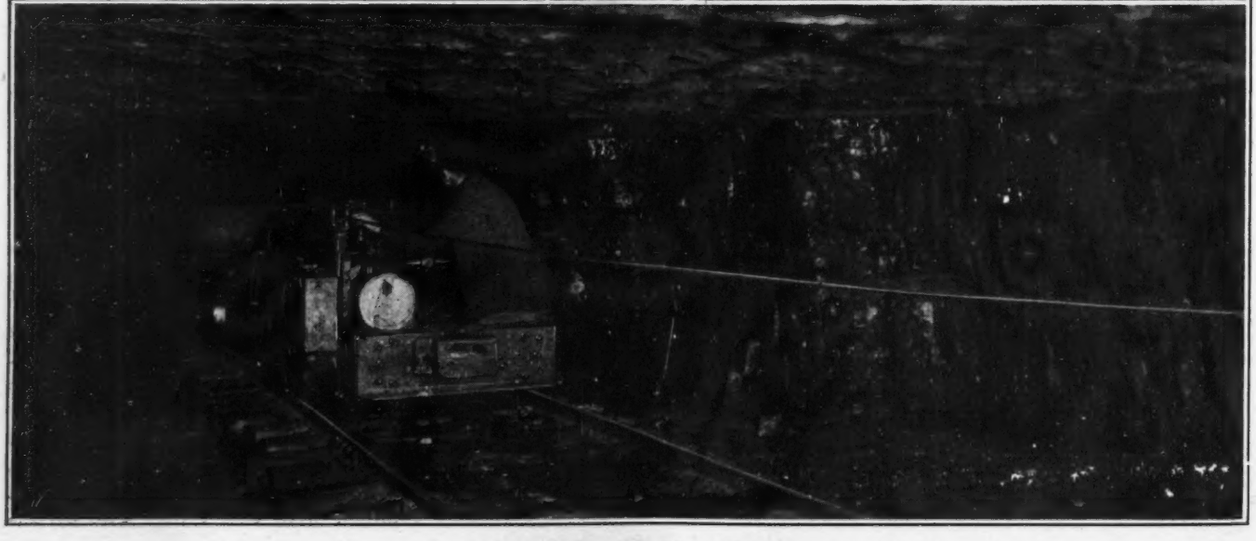
$82,612. Adding $15,000 which it is estimated will cover the small repair parts kept in stock by electricians at the twelve mines, makes a grand total of $97,612 invested in repair parts exclusive of armatures and other items which circulate back and forth between the mines and the repair shop. This figure divided by

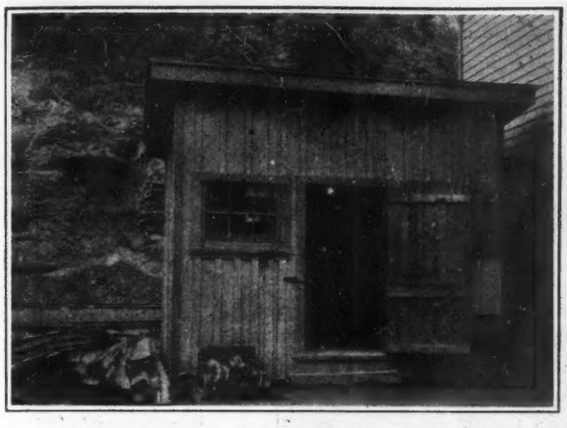
Gatherers in Mine 12

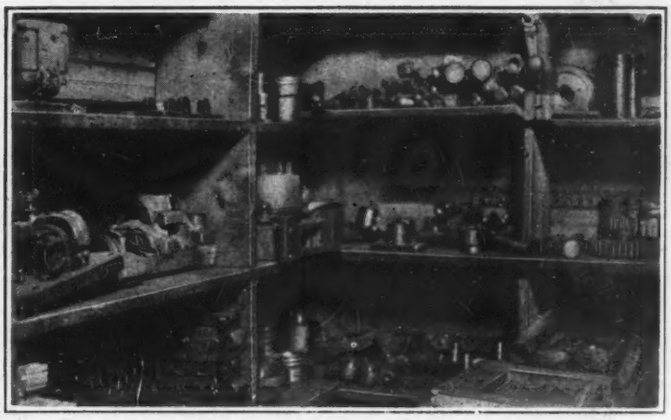
At the bottom is shown a 6-ton cable-reel locomotive of the type commonly used for this service in Island Creek mines. This machine undergoes the most rigid inspections periodically which is one of the reasons why Island Creek haulage difficulties do not include many locomotive breakdowns. Such careful inspection usually reveals mechanical weaknesses before they cause trouble. Also, the system of management at these mines calls for intelligent treatment of equipment by operators. If inspection shows a motor has received unnecessary abuse, something is done to correct careless handling before it becomes habitual.

Each man is given some personal responsibility for his own motor, however. He is expected to repair controllers and keep brakes adjusted. At the upper right is a thirteen-year-old locomotive, fresh from the shops, which is still giving good service.









Group Storage of Supplies and Orderly Handling of Them Cuts Down Costs

At the left is the supply building for Mines 11 and 12. These mines are close together, so, instead of carrying a set of supplies inside each mine, one set is kept on the outside at a point halfway between the two.

At the right is an interior corner of the supply building. In order to avoid loss of time in getting supplies from the central warehouse, the mine electricians keep at the respective mines a small supply of such parts as are needed frequently.

22,000—the daily tonnage—gives $4.43 for spare and repair parts per ton. This favorable figure indicates the advantage gained by standardization, and by centralized operation. As a comparison it is safe to say that the average West Virginia mining company carries $9 or more for spare and repair parts per ton. To substantiate this estimate there is cited the following actual figures of six mines: $14.57, $8.34, $9.52, $10.72, $7.58 and $8.34.

Responsibility for inspection, supervision, and maintenance of electrical and mechanical equipment of the Island Creek mines is not centered upon one man but instead is divided among four men, who report individually to the general superintendent. One of these men—the chief electrician of direct-current equipment—has charge of all underground machinery, except the alternating-current mine pumps. The chief electrician of alternating-current equipment has charge of substations, fans, hoists, transmission lines, house lighting, etc. The master mechanic is in charge of the machine tool, electric welding, and blacksmith departments of the central shop. A general inspector has among his duties the complete inspection of tipples and tipple equipment.

The division of the electrical work between two men is unusual, however, at the Island Creek mines it apears to work satisfactorily. It amounts practically to the equivalent of having one man in charge of underground equipment and another in charge of outside equipment. This arrangement enables each man to concentrate on his particular branch of the work, and gives each an opportunity to go into detail in investigating trouble and devising means of avoiding recurrences of it.

Six men and the chief, H. L. Bradshaw, compose the average force of the alternating-current department. A large room in the main shop building serves as headquarters. Here the chief has a desk, and in addition the room is used for the storage of tools, small repair parts, portable test meters, and small equipment. Benches along the wall provide a place for miscellaneous repair work. No winding equipment is provided for the reason that burn-outs of alternating-current motors are rare. The few jobs of this class of winding are transferred to the winding room of the direct-current department.

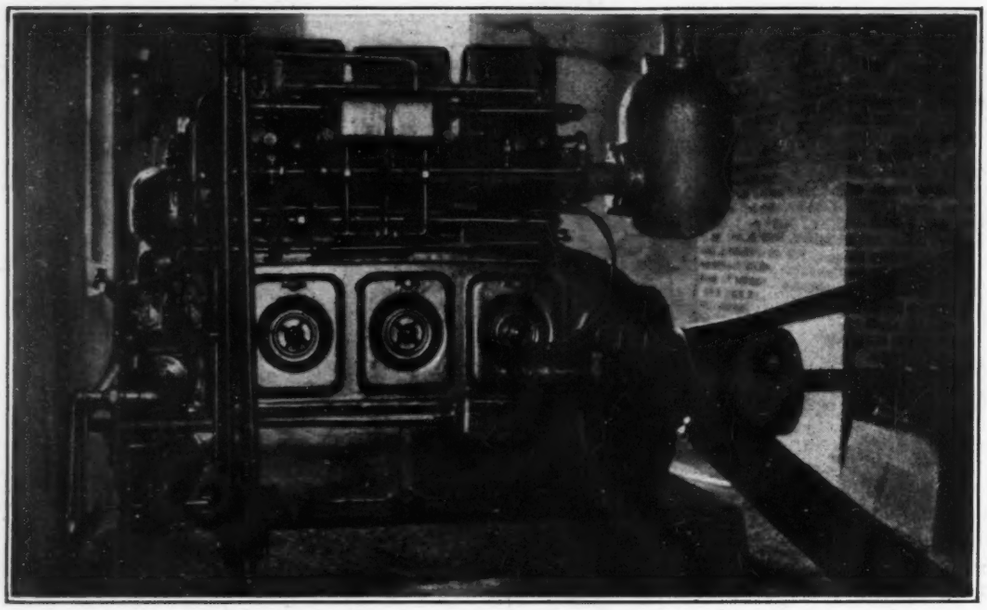
Cleaning and inspection are two important phases of the work of the alternating-current department. It is a company policy to do everything possible to prevent breakdowns. The prevention of trouble leaves more time for inspection and cleaning. This, in turn, further reduces trouble.

All synchronous converters, motors, and other electrical apparatus are regularly cleaned out with compressed air. For this purpose there is used a 17.5-cu.ft., motor-driven air compressor mounted on a Ford chassis. This machine is parked alongside a tipple, substation, or other building where electrical equipment is installed, the motor cable is plugged into a power receptacle and the compressor is operated until the blowing out of the machinery is completed. This one compressor serves all of the mines.

Another interesting purpose of this portable compressor is to act as a spare for the air brakes and control of the hoists at the two shaft mines. If any trouble should occur with one of the motor-driven compressors, hoisting would be stopped only for the short time necessary to get the portable unit on the job, plug in the electric cable and connect the air hose. Cleaning equipment of the portable type costs far less than equipping with stationary compressors every building where electrical equipment is in use.

Although electrical equipment is inspected when it is blown out, the chief of the department makes it a point personally to inspect all important items such as substations, mine fans and hoists. He sees each fan at least once each week and sends a weekly report of the condition of each to the general superintendent. The substations and hoists are inspected as often as the fans but no reports are made out covering these. The chief electrician decides how often such inspection is necessary.

Other work coming under the alternating-current department is the care and reading of meters. Besides the distribution meters in substations and hoist houses, coal company meters are installed at the power company's transformer substation. This installation consists of a graphic voltmeter, graphic power-factor meter, graphic wattmeter, and a plain watthour meter. These furnish a complete check on the watthour and demand-meter readings of the power company, and are read by the chief electrician at the same time that the representative of the power company reads his meters. In the several years of use of purchased power no discrepancies have arisen in these readings.



Ready for an Emergency

This three-cylinder gasoline engine serves as an auxiliary to the motor drive of the ventilating fan at No. 21 mine. Squarejaw clutches on either side of the fan are manipulated when it is desired to change from one drive to another. The engine is equipped with dual ignition and with an electric starting system.

It is with the direct-current equipment that the greatest opportunities exist for improvement in the continuity of service, and in the reduction of repair cost. There are several reasons for this condition. In the first place a direct-current motor is normally less rugged than one of the alternating-current type. In the second place, especially at the Island Creek mines where all of the direct-current equipment is on the inside, this equipment is subjected to less favorable conditions and to the likelihood of greater abuse.

The chief of the direct-current department, L. D. Thompson, has made the most of the opportunities. With the full backing of the management he practically has eliminated loss of time due to breakdowns and has cut the repair costs per ton to a figure which is worthy of the envy of any company. It would be a joy to any progressive chief electrician to see how well "set up" and well "lubricated" is this department.

The principal features, in their order of importance, which contribute apparently to the success of the department, are:

(1) The mine electricians report to the chief electrician instead of to the mine foremen.

(2) So far as possible the mine electricians are freed from all repair work which can be done in the central shop and which requires special care, special skill, or special tools.

(3) The department has the understanding, confidence and backing of the management.

(4) A system without red tape is used.

(5) Control over the operators of the equipment. As an example, the motormen must do their own repair work on the locomotive controllers, and must keep the brakes properly adjusted.

The organization of the thirty-two men composing the direct-current department is shown in Table III. Opposite each mine the daily tonnage is given to indicate how few men are needed in proportion to the size of the mine. In several instances one head electrician serves two mines. This is possible because the mines are located close together. At those mines where the electrician has no helper, a man from the central shop lends assistance whenever necessary.

At first thought it may seem peculiar that a foreman is needed for the two bonding crews of two men each. The foreman's principal duties are to find out where bonding is necessary, plan the work, and to see that material is on hand so that the men will not be delayed. Pin-driven bonds are used exclusively. Care is taken to have the holes reamed out clean before the bonds are applied.

The practice of having the mine equipment assembly work at the central shop segregated and under the chief electrician instead of under the master mechanic of the shop is an unusual arrangement, but it gives the chief electrician entire control over an important branch of the repair of inside equipment. The arrangement leaves no opportunity to shift responsibility in case of failure due to poor workmanship.

Table III—Organization and Number of Men in the Direct-Current Maintenance Department, and Daily Tonnage of Each Mine

Chief Electrician of Direct-Current Equipment (A total of 32 men in the department)	Electrician and helper, Mine 1—2,000 tons
	Head electrician, Mines 7 & 8 — Electrician, No. 7—2,000 tons; Electrician, No. 8—1,700 tons
	Head electrician, Mines 11 & 12 — Electrician, No. 11—1,600 tons; Electrician, No. 12—1,800 tons
	Electrician and helper, Mine 14—2,450 tons
	Head electrician, Mines 15 & 16 — Electrician, No. 15—1,350 tons; Electrician, No. 16—1,300 tons
	Head electrician, Mines 17 & 18 — Electrician, No. 17—1,000 tons; Electrician, No. 18—1,250 tons
	Electrician, Mine No. 20—1,900 tons
	Electrician, Mine No. 21—1,900 tons
	Foreman of bonding crews, two crews of two men each.
	Foremen of winding department of central shop, four winders
	Foreman of mine equipment assembly work in central shop, two men.

The work of the assembly department is one of the most important features connected with the maintenance of underground equipment. It is this department which relieves the mine electrician of work which can better be accomplished in a central shop. A few of the jobs done in this department will be described.

The mining machine parts repaired and assembled are the cutter chain, cutter bar, cutter head, main gear assembly, intermediate gear assembly, main frame, and bottom plate. These repaired and assembled units are kept in stock at the shop ready to send to any mine that has need of them. With cutter chains it is the practice to have the mine electrician put on a complete new chain whenever as many as three bad lugs are

found. The removed chain is then taken to the shop and entirely rebuilt. Instead of putting the rivets in cold as is the usual practice when making repairs inside of a mine, the rivets are put in hot and the worn straps which are good enough to use over again are carefully paired as to length. For the riveting, an electric heater is used. This provides a quick, clean, and certain means of bringing the rivets to the desired heat.

An important feature of the work on the main gear assembly is the use of the electric arc welder to lock the cap screws of the drive sprocket. Such practice, which eliminates a former source of trouble, would not be practical if the mine electricians were allowed to renew parts of the assembly. Instead, if a main gear, drive sprocket, or other part requires renewal, he sends the entire assembly to the central shop and instals a repaired unit in its place, thus saving time and doing a better job.

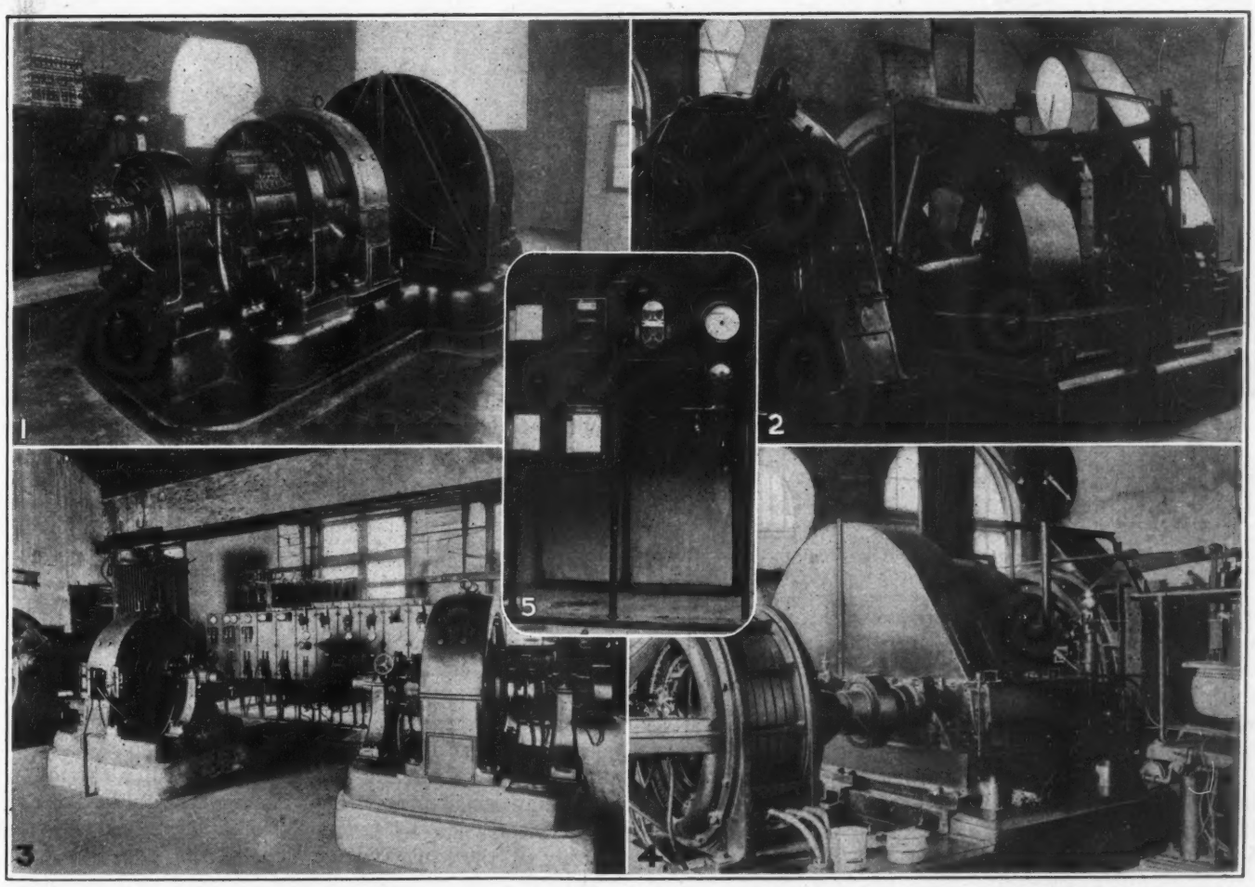
Another example of the work that can be done in the central shop, is the reinforcement of the cast-steel step plate of the bottom-plate assembly. As a result of several cases of breaking the intermediate shaft bearing housing of the step plate, these housings are now reinforced by shrinking on a ½x1¼-in. forged steel band. This is done on every bottom plate that comes to the shop for repair.

Some of the locomotive parts which are repaired and assembled at the central shop are trucks complete with tires and split gears, bumpers complete with draw pockets, and armatures complete with bearings, bearing housings and pinions.

The use of split gears is favored by the Island Creek Coal Co. because it eliminates the necessity of pressing wheels off the axles, consequently decreasing the liklihood of loose-wheel trouble. When split gears are applied in the central shop instead of at the mines, a perfect fit is assured so that there is little chance of a gear loosening. The practice is to use abrasive brake shoes interchanged with the plain type, as the condition demands, so as to wear the tire uniformly. In many cases tires serve their full life without once having to be trued in a lathe.

It is the practice not to change any locomotive draw pockets at the mine, but rather to put on complete new bumpers. The bumper is applied by setting twelve rivets. Another important locomotive practice is that of not allowing the mine electrician to change bearings and pinions on locomotive armatures. In case of trouble he puts in a spare armature which is complete with these parts. This saves time and insures the use of parts that are assembled in the best possible manner.

It was mentioned in a foregoing paragraph that sys-



The Island Creek Coal Co. Tries to Be Economical in the Purchase and Application of Power

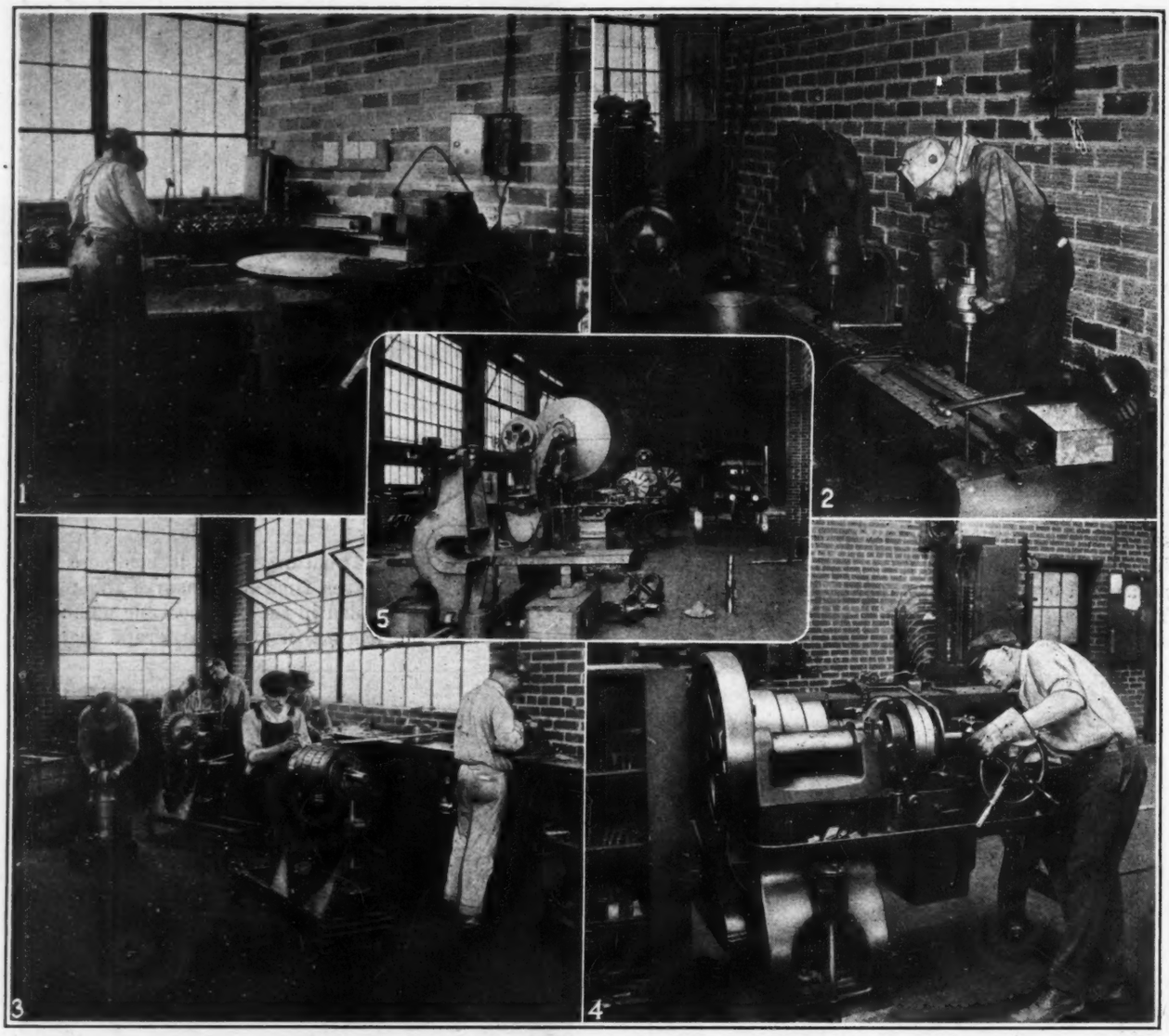
1—This is the flywheel motor-generator set of the Ilgner-Ward-Leonard hoist at Mine 21. The motor is 350-hp., the generator 400-kw., and the exciter 19-kw. During the regular hoisting of coal the demand of this motor-generator set fluctuates between 175 kw. and 275 kw. and drops to a steady value of approximately 40 kw. when the hoist is not in operation.

2—The main hoist at Mine 21, is driven by a 475-hp. direct-current motor.

3—An Island Creek substation from which alternating current is distributed to light the town of Holden, and direct current is supplied to operate Mine 1. Converters rather than motor-generator sets are used in all mine substations. No synchronous motor drives are used, yet the power factor at the central metering point averages 80 per cent.

4—An auxiliary hoist at Mine 21 which has a 200-hp. induction motor and cylindrical drums.

5—Power is checked by these electrical instruments of the power company and coal company at the central metering point. On the coal company's panel at the left are mounted, in addition to a watt-hour meter, a graphic voltmeter, graphic power-factor meter, and a graphic wattmeter. With an annual power bill of somewhat over a quarter of a million dollars, there is, naturally, considerable satisfaction in having a check on the meters of the power company because there is always a chance of error that can be corrected.



The Island Creek Coal Co. Has a Central Machine Shop of Which It Is Proud

1—Rebuilding a cutter chain. If a mine electrician finds as many as three bad lugs in a chain he puts on a new one and sends the old chain to this shop. Here it is entirely rebuilt. The worn straps which are found good for further use are carefully matched as to length and the rivets are put in hot. The electric rivet heater is at the right.

2—Rebuilding the cutter bar of a short-wall mining machine. The mechanical work on direct-current equipment is under the chief electrician instead of under the machine shop foreman. This centers the responsibility.

3—In the winding room plenty of space, good light, good ventilation, and steam heat for cold weather make things pleasant. Factory-made coils are used, and bad commutators are sent to the factory for repair or refilling. All armatures are dipped and then baked in an electric oven.

4—The bolt-threading machine has a motor in its base. All other machine tools are also of the individual motor-driven type.

5—Interior view of the central machine shop at Holden.

tem without red tape is responsible in part for the successful maintenance and operation of the direct-current equipment in these mines. This system involves only three employees: The motorman or machine operator, the mine electrician, and the chief of the direct-current department.

The plan begins to operate when the motorman checks in at the end of each shift, signing his name to a report, indicating the number of the locomotive which he used and its condition, detailing what sort of trouble, if any, developed during the shift. On this same kind of report sheet, the chief electrician notes any trouble encountered with the mining machines. He keeps on file one copy and sends the other to the chief electrician.

This report impresses on the equipment operators their responsibility in the proper handling of equipment; it is for reference in case of argument, and for checking the past record of a former operator who again applies for a position.

The next report in the system—the one of most concrete value—is that made up each night and morning by the chief electrician as a result of telephone conversations with the mine electricians. In making out this type of report, the chief uses no prepared form but instead a plain sheet of paper on which he notes the number of the mine and opposite it an O.K., if the mine electrician reported no trouble during that shift, and a short description of trouble if any occurred. When making up the same type report the next day, he notes whether items of trouble formerly reported have been repaired, and also what was the reason for the breakdown.

Receiving these reports each night and morning by phone keeps the chief electrician in touch with every case of trouble and affords him an opportunity to investigate before machine difficulties become "ancient history." By referring to his file of these telephone reports he can check the frequency of certain failures

and be guided thereby in a decision as to what expense would be justified in improving that part of the equipment which was affected.

No cases of repeating trouble "get by" very long at the Island Creek mines. Many improvements which were first put into use at these mines have later become standard with the manufacturers of the equipment involved. Instead of accepting equipment failures as a matter of course, the Island Creek organization considers them indications of weakness in the machine, or indications of unnecessary abuse. Abuses are stopped if it is practicable to remedy the abusing condition. If the machine shows weakness, a concentrated effort is made to find a way to strengthen it.

Inspection Cuts Maintenance Cost

The regular inspection of mining machines, locomotives and electric coal drills cuts down delays and reduces maintenance cost by revealing where the "stitch in time" is needed. The mine locomotives and coal drills are inspected each day at the end of the shift, and the mining machines once a week. Each machine has its day to be brought to the pit for this weekly inspection. Since the average is about six machines per mine, the electricians must inspect one machine each day.

To facilitate inspection, electric coal drills are placed on wooden horses by the crews at the end of the shift. These drills are set so that any stray oil will drain from the armatures back into the gear cases. Their position is such that the one mine electrician can, without help, give them a running test. An extra drill is kept on hand at each mine in order that there may be but a short delay to the crew in case of a breakdown, and to avoid the necessity of calling an electrician to the mine at night.

The handling of repair parts for the direct-current equipment is another work which is done systematically but without red tape. The main supply house, where a large and complete stock of parts is kept, is located near the central shop at Holden. To avoid delays in getting material from the main supply house to the mines, a small stock of the more commonly used parts is kept at each mine. These parts have been charged out against the mine, so that no formalities are necessary when the repairman wants to use some of this material. The stock is replenished each day, the chief electrician making out the order after finding out by phone from the mine electrician what parts have been used. The Island Creek practice is in sharp contrast to that of some large companies which seem to let the formalities of accounting interfere with the speedy repair of equipment.

As is indicated in Table III, the winding department of the central shop is under the chief electrician of the direct-current department. This is because practically all of the rewinding is for direct-current equipment. Several of the practices in the rewinding shop differ from those of some of the larger coal companies, but agree with the present trend among the majority of these organizations.

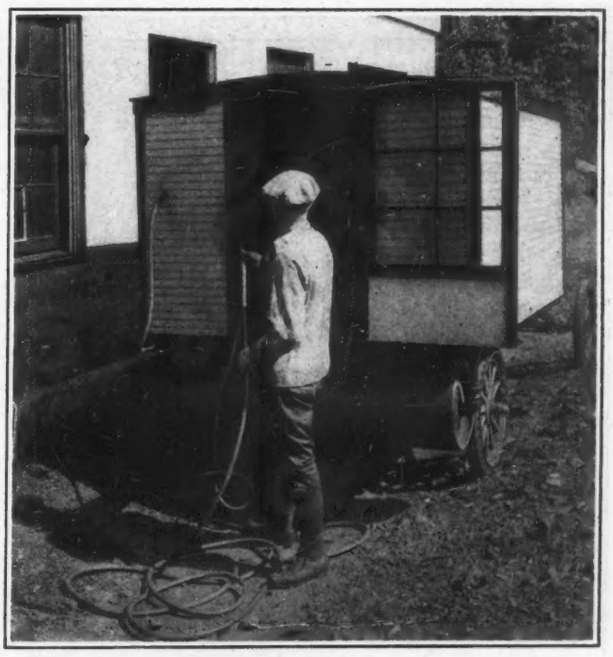
Two of the practices referred to are those followed in making armature coils and in repairing commutators. Only in cases of emergency are coils made at the Island Creek shop. Instead they are purchased from the motor manufacturer, for the reason that such coils fit better and also are more thoroughly insulated. The use of hot presses in the manufacture of coils is apparently the deciding factor in favor of the factory product.

Only the lesser repair jobs are undertaken on commutators. If one is received which requires the renewal of a large number of the mica segments, the insertion of several new bars or the replacing of all the mica V rings, then the whole commutator is returned for repair or refilling to a reliable manufacturer who is equipped with all of the special tools and presses for putting the commutator in good-as-new condition.

In the Island Creek shop, armatures are dipped and then baked in an electric oven. Special tools for speeding up the work and for improving the jobs are made for every operation which is a frequent repeater. Costs of the work are kept by distributing the material and labor charges against the specific mine and under one of the headings: "gathering motors," "mining machines," "drills," "pumps," "ventilating equipment," "tipples," or "substations." Costs are not kept of the individual jobs. The expense of clerical work for doing this is considered to exceed the value of the data obtained.

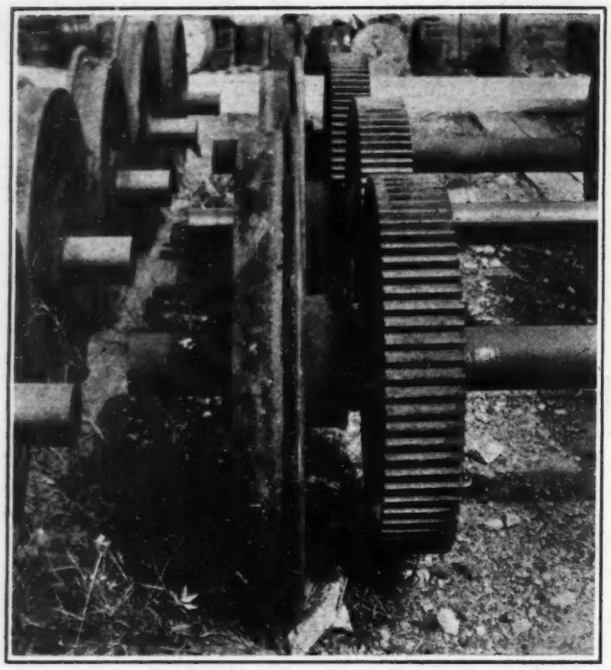
The foreman of the winding shop makes up each day for his own use and for file a list of the jobs on hand, indicating opposite each the mine to which the work is to be charged, and which of the jobs is of first importance. Any of those completed on the day the list is made up are so noted for record. The current list hangs on the wall so that the winders, upon completing a job, know what to do next even though the foreman is not there to tell them.

Little mention has been made of the machine tool, blacksmith, and autogenous welding departments. These are under a master mechanic who, like the two chief electricians, reports directly to the general superintendent. The equipment in the machine tool department



This Portable Outfit Saves Money

A 17.5-cu.ft. motor-driven air compressor mounted on a Ford chassis is used for air cleaning of all electrical apparatus located outside of the mines. When photographed the compressor had just been parked alongside a fan house and the operator was unreeling the hose preparatory to blowing out the fan motor. This compressor is the same size as those used in conjunction with the hoists at the two shaft mines and, therefore, acts as a spare for these installations.



Rust Has Little Chance Here

Locomotive axles should be painted before being stored; otherwise, whether the storage space is sheltered or not, the axles will rust. The Island Creek Coal Co. believes in the use of paint for this purpose and, consequently, all these axles are thus protected.

is complete but not elaborate. It consists of a planer, 30 in. x 30 in. x 9 ft.; a bolt machine which can take bolts in sizes up to 2-in. and pipe up to 1¼-in.; a pipe machine, up to 6-in.; an engine lathe, 42 in. x 12 ft. (maximum chuck diameter and distance between centers) used almost exclusively for tire work; a second engine lathe, 27 in. x 12 ft.; a third engine lathe, 21 in. x 7 ft.; a 2-hp. motor-driven emery grinder; a radial drill of 24 in. radius; a radial drill of 36 in. radius; a plain, horizontal milling machine with a 28-in. feed; a power hacksaw, 9x9 in.; a shaper of 24-in. stroke; and a 100-ton wheel press.

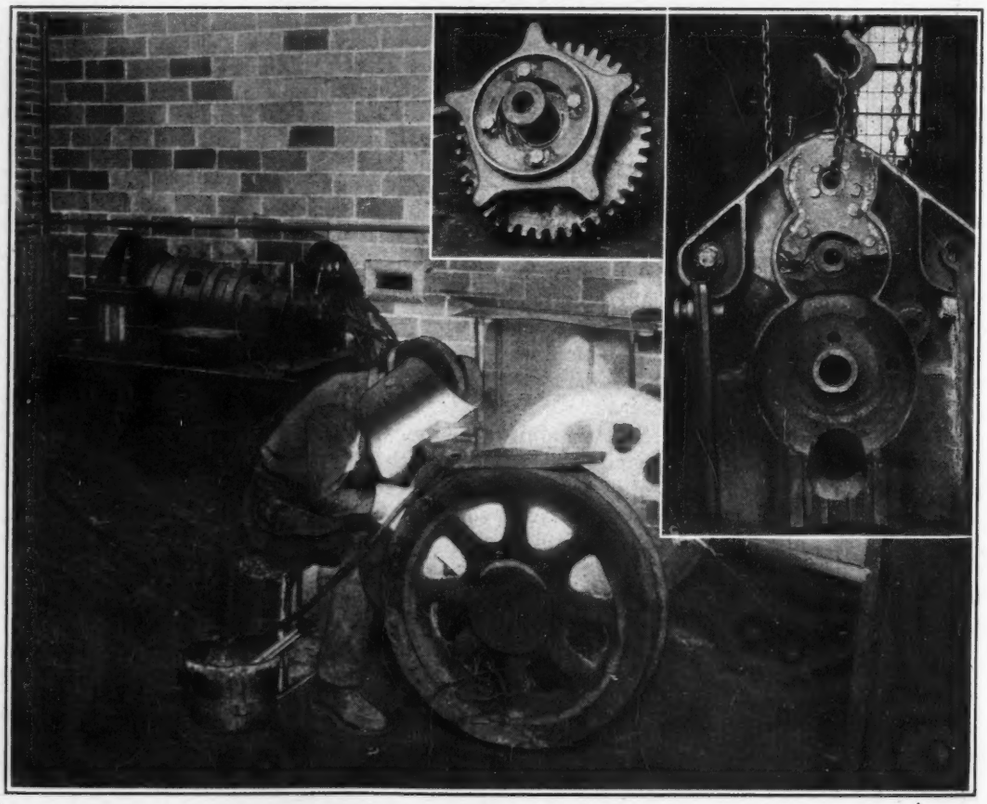
One of the busiest machines in the shop is the 200-amp. arc welder. Roscoe Garret, the master mechanic, states that he does not see how they got along at all without this welder. All such parts as are electrically welded by other mining companies are also welded by Island Creek, except locomotive tires and armature shafts. The filling of tires was tried several years ago but was given up because the added metal did not wear as well as the original tire steel. Special manganese-steel electrodes such as are now being used by some coal companies were not tried, however. The building up of the ends of armature shafts is done with oxyacetylene. This gas torch is also used for cutting, and for the welding of cast iron.

In contrast to many mines which operated through the boom period, there is no unused machinery lying around Island Creek properties. This in itself indicates that care has been exercised in buying new equipment, and that obsolete material is disposed of promptly as second-hand material or junk.

Back of all is the management. It is true that the mining conditions under which equipment operates at the Island Creek mines are almost ideal but by no means are all of the operating conditions natural. Many were created by good management. A specific example is the arrangement whereby the mine electricians report to the chief electrician instead of to the mine foreman. Many mining men say that this is impractical, but what others say does not bother the Island Creek management. Men, methods and equipments are judged by the results they get. Results at the Holden group of twelve mines are satisfactory.

The Arc Welder Is Busy

Island Creek men can't understand how they ever got along without this equipment. Today they do every welding job possible at mines except filling locomotive tires and building up armature shaft ends. Two jobs are shown at the right: The cap screws on a mining machine drive sprocket have been locked in place and a ⅜-in. plate riveted and welded onto the main frame of a mining machine. The casting around the rear stud hole had been broken away.



Proper Handling Helps Make Mine Output Clean

Pan and Belt Conveyors in Slopes and on the Inclines Transport Coal to Tipples—At Two Mines Self-Dumping Cages Are Used—Various Sizes Picked Separately

By Alphonse F. Brosky
Assistant Editor, *Coal Age*
Pittsburgh, Pa.

VARIATIONS IN ELEVATION of the Island Creek seam with respect to tipple levels at the twelve mines of the Island Creek Coal Co. grouped near Holden, W. Va., have necessitated the employment of several schemes for transporting the coal to the respective tipples. Thus at six of the mines the seam lies below the tipples and coal is raised on concreted slopes by pan conveyors—in one instance by a belt conveyor. At four mines the seam lies above tipple level, requiring pan conveyors to lower the coal from the headhouses to the preparators. However, at one of the four, the difference in the elevations of the discharge feeder in the headhouse and the shaker screen in the tipple is so little as to make the conveyor gallery practically level.

At the two mines most recently opened—Mines 20 and 21—the seam lies so far below the surface that shafts are needed to hoist coal to the tipples. Self-dumping cages are used. Further information covering variations in plant layout at these mines is condensed in Table 1.

Depending upon the capacity of the respective mines, double track in lengths of 600 to 1,200 ft. constitutes the trip landings adjacent to each dumping point. Cross-over dumps are employed at eight mines, kick-back dumps are in use at two, and the self-dumping cages serve the two shaft mines. Although dumping equipment is of these three different types, only three men are required for their operation at each mine, so carefully planned are the arrangements for handling cars. The equipment is so designed that in no phase of the dumping operation do two cars come together violently. This reduces mine-car wear and tear.

The arrangement of the trip-handling and dumping equipment in No. 8 mine, which is representative of seven other installations, is shown in Fig. 1. This mine is now producing about 2,100 tons a day. The double-track trip landing on the load side of the dump is 1,000 ft. long. The trips are moved forward by a feeder. Between the feeder and the dump is a 1½-per cent downgrade which causes each loaded mine car (roller-bearing equipped) to gravitate freely to the dump immediately after it is uncoupled.

The dump itself is inclined sufficiently to cause each empty car to clear the dump before the next car enters. Leaving the dump, the car rolls to a kick-back from which it is shunted to the empty storage track where it is picked up and joined with other cars by a trip maker. One man handles the two car hauls and uncouples the cars; a second man operates the dump and the third couples up the empties.

More space in this article will be devoted to Mine No. 20 than to others because it is one of two of the newest mines in the group. Mine No. 21 is a duplicate of Mine No. 20 in respect to layout and equipment, except for slight differences which conditions required. To reach Mine 20 from Holden one travels south and west about 4½ miles on a stretch of concrete road built by the company along Whitman Creek.

Here has been erected a modern mine plant of concrete, steel and stone, equipped to produce 4,000 tons of coal a day. No. 20 hoisting shaft is 285 ft. deep. It is semi-elliptical in cross section, with extreme dimensions of 12x27½ ft. It is lined with 12 in. to 18 in. of concrete and equipped with self-dumping cages in balance. A solid block of coal measuring 1,151x1,518 ft. surrounds this shaft. The shaft bottom layout is of especial interest because of the ease with which it enables three men to handle coal in 40-car trips at the rate of 4,000 tons in 8 hr.

The shaft bottom proper is supported by a brick arch resting on sandstone piers. The width of this arch is 22 ft., its length 100 ft. and its rise, 3 ft. Its minimum thickness is equivalent to four courses of standard size bricks set edgewise. The thickness of the masonry piers is 2 ft. From the inby end of the arch extends an 1,100-ft. trip landing of two tracks. A portion of the landing adjacent to the arch is permanently supported by steel sets of 15-in., I-section beams on 6-in., H-section legs. The sets are on 4-ft. centers. Already fifty-two such sets have been erected

In the headpiece are three views at Mine No. 20. Looking at these views one in realty also sees No. 21 mine for the design, layout and equipment in both are duplicates. The desire of the company for permanence of construction in these two plants is illustrated by its use of sandstone in the piers under the big bottom arch and in the walls of the hoist house on the surface. These two mines are built to run for 50 years or more.

Slope Bottom Arrangement at No. 8 Mine

The layout of this bottom and the choice of equipment for it are worth particular notice. First, the grades are such as to cause a mine car to gravitate freely from the trip feeder onto the cross-over dump and off again after dumping. These grades are not excessive; it is the roller-bearing wheels that do the trick. One car leaves the dump slightly before another enters, avoiding destructive forces of impact between them.

and 100 more are being erected so that after this work is completed the approach to the shaft will be permanently supported through a distance of about 700 ft.

Loaded cars in trips of 40 are delivered on the storage track by a 15-ton locomotive to a trip feeder which passes the cars, one at a time, over a favorable grade to the shaft. As each car gravitates toward either of two cage landings it passes over an antomatic switch which is thus set to guide the car following to the opposite cage landing.

The car is stopped and held by a friction car-check at the landing. The car-check is manually operated but the cager, to which the car moves on being released from the car-check, is automatic. When a cage reaches the landing level, the stop holding an empty mine car on the cage is automatically depressed; at the same time the cager horns are swung away from the front wheels of a loaded mine car and thus both cars are simultaneously let free to move.

The loaded car moves into the cage, pushing out the empty. As the loaded car clears the cager, a front wheel trips a lever which automatically sets the cager horns in a position to hold the loaded car following. Upon leaving the cage the empty car is delivered by a kick-back to a trip maker which joints it with other cars on the empty-car storage track. The simplicity of this equipment, requiring only three men for its operation, is notable.

An excellent feature of the layout at the bottom of the auxiliary shaft is worthy of mention. Unlike the customary track arrangement at the foot of a man-and-supply shaft, that in No. 20 mine provides a 300-ft. double track. The second track is for the storage and for the assembly of a trip of supplies. By its use the latter job is greatly simplified.

No less important than efficient mining is the handling and preparation of coal on its way from the mine car to the railroad hopper. In Island Creek properties preparation really starts at the face where the miners are required to remove as much as they can see of the one band of slate which divides the seam into two benches and whatever other refuse might be mixed with the coal during shooting. This gob is stowed between the double tracks in the working place. All coal is screened, after which it is customary to pick it on its way to the loading booms.

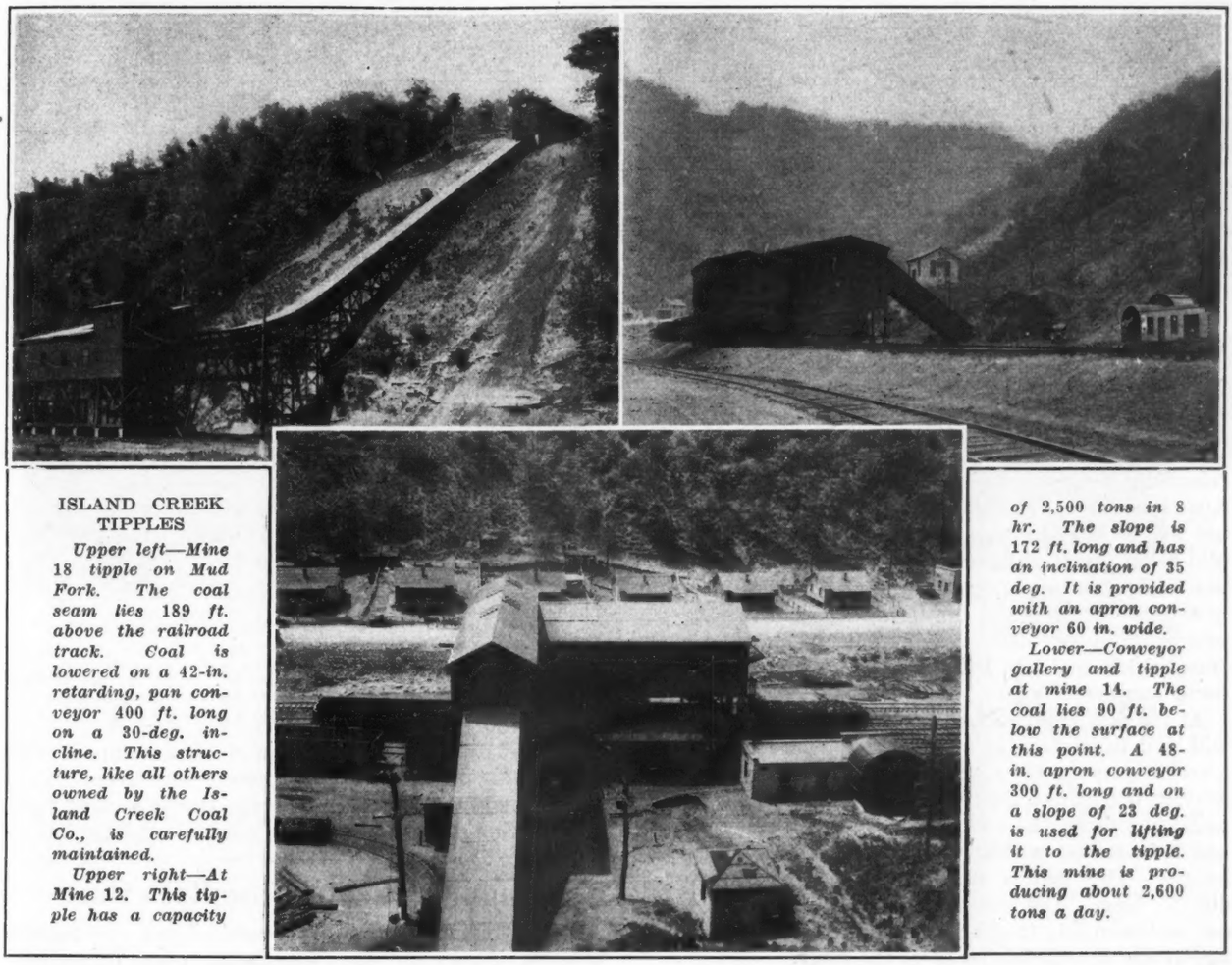
By following the path of travel of coal through the tipple at No. 20 mine, a fair conception of preparation facilities at all of the mines of this company is gained. This tipple is spread over four railroad tracks, is of all-steel construction and has a capacity of 500 tons an hour. On leaving the mine cars on the self-dumping cages, the coal is guided by a chute into an 8-ton, steel-plate, receiving hopper, from which it is fed by a reciprocating feeder to the shaking screen. A fly gate installed in the receiving chute can be set to divert either mine rock or emergency mine-run coal from the receiving bin, and by means of a second fly gate each of these is directed to its respective destination, the

Washing Down No. 14 Conveyor Gallery

Coal dust on an inclined walkway is a menace to those who travel there because it makes treacherous footing. The Island Creek Coal Co. avoids this by removing the dust with a stream of water. This scheme also is employed in cleaning the interior of the tipple.

Table I—Detail On Island Creek Coal Co.'s Twelve Mines

Mine Number	Class	Means of Transporting Coal to Tipple	Conveyor Details: Width (in.)	Conveyor Details: Length (ft.)	Slope (deg.)	Elev. of Coal with Respect to R.R. Track	Tipple Capacity (tons)	Present Mine Output (tons)
1	Slope	Belt conveyor	48	285	18	37 (below)	3,500	2,800
7	Slope	Apron conveyor	60	260	20	20 (below)	2,500	2,100
8	Slope	Apron conveyor	60	260	20	20 (below)	2,500	2,000
11	Slope	Apron conveyor	60	172	35	27 (below)	2,500	1,600
12	Slope	Apron conveyor	60	172	35	27 (below)	2,500	1,700
14	Slope	Apron conveyor	48	300	23	90 (below)	3,500	2,600
15	Drift	Retarding pan conveyor	42	315	30	153 (above)	1,500	1,500
16	Drift	Retarding pan conveyor	42	244	21	88 (above)	1,500	1,300
17	Drift	Pan conveyor (almost level)	42	108	1½	61 (above)	1,500	1,300
18	Drift	Retarding pan conveyor	42	400	30	189 (above)	1,500	1,500
20	Shaft	Self-dump. cages	..	...	..	285 (below)	4,000	1,700
21	Shaft	Self-dump. cages	..	...	..	228 (below)	4,000	1,700



ISLAND CREEK TIPPLES

Upper left—Mine 18 tipple on Mud Fork. The coal seam lies 189 ft. above the railroad track. Coal is lowered on a 42-in. retarding, pan conveyor 400 ft. long on a 30-deg. incline. This structure, like all others owned by the Island Creek Coal Co., is carefully maintained.

Upper right—At Mine 12. This tipple has a capacity of 2,500 tons in 8 hr. The slope is 172 ft. long and has an inclination of 35 deg. It is provided with an apron conveyor 60 in. wide.

Lower—Conveyor gallery and tipple at mine 14. The coal lies 90 ft. below the surface at this point. A 48-in. apron conveyor 300 ft. long and on a slope of 23 deg. is used for lifting it to the tipple. This mine is producing about 2,600 tons a day.

former to the rock bin and the latter to a railroad car on No. 1 track.

The screening rig is double-decked and perforated to separate run-of-mine coal into lump, egg, nut and slack sizes. The upper deck is provided first with a 7x15-ft. area of stepped screen with slotted perforations which separate the lump and egg from the under sizes. The coal next flows over an 8x7-ft. area of stepped screen with slotted perforations which separates the egg from the lump size. On the lower deck the slack is separated from the nut by a 7½x15-ft. stepped and slatted screen.

From the screen the lump is discharged onto one of two picking tables and either egg or nut or both are discharged onto the other. Thence by loading booms the picked sizes are lowered with a minimum of breakage to railroad cars on the two middle tracks. A cross flight-conveyor extending from the nut-and-egg picking table to the lump picking table enables the prepared sizes to be mixed for loading on the lump track. The slack is chuted directly to a railroad car on No. 1 track. Refuse from the picking tables is carried by a conveyor to a 20-ton rock bin. This conveyor also can carry egg coal to a 20-ton, house-coal bin.

In the Island Creek seam is a 4-in. bed of soft coal at the top and a 10-in. thick bed at the bottom. These softer beds of coal are separated from the remainder of the coal on the picking tables and are loaded on No. 4 tracks as a separate product. The transfer of the soft coal is accomplished by a cross conveyor.

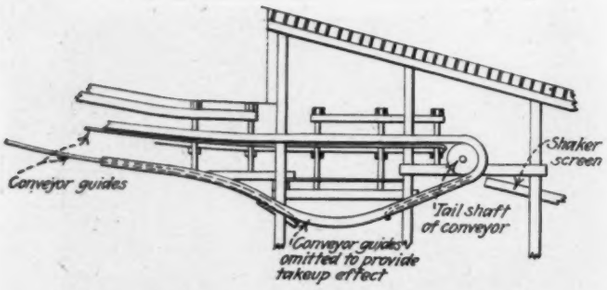
At No. 18 mine on Mud Fork the seam lies 189 ft. above the elevation of the railroad track under the tipple. In the headhouse at this mine, coal is dumped by a crossover dump and is conducted by a receiving chute to an apron feeder, by which the coal is fed to a retarding conveyor. In the receiving chute is a short, screen section which separates slack and drops it onto the conveyor behind the feeder. Thus is formed a soft bed which cushions the fall of the larger sizes as they drop from the feeder to the conveyor.

The conveyor is 42 in. wide and 400 ft. long on a slope of 30 deg. The pans are provided with 1-in. high beads which, together with the fine coal on the bottom of the conveyor, prevent the lump coal from rolling down the slope. This conveyor is driven at a speed of 60 ft. per minute by a 25-hp. alternating-current motor and is equipped with a magnetic brake and also a hand brake for emergency use. It has a capacity of about 1,500 tons in 8 hr.

An interesting feature in the design of this steep and long retarding conveyor line is the absence of a screw take-up. Slack in the conveyor is automatically gathered as shown in Fig. 7, by troughing and gapping the conveyor guides under the return strand adjacent to the tail sheaves. By reason of the "hang" of the return strand from the drive sheaves at the head of the conveyor, the slack in the conveyor sags down in the gap between the guides. This keeps the load strand of the conveyor taut.

Shaking screens, picking tables and loading booms are used in the preparation of coal at all the mines including No. 18 mine.

At Huntington, W. Va., the company is erecting a



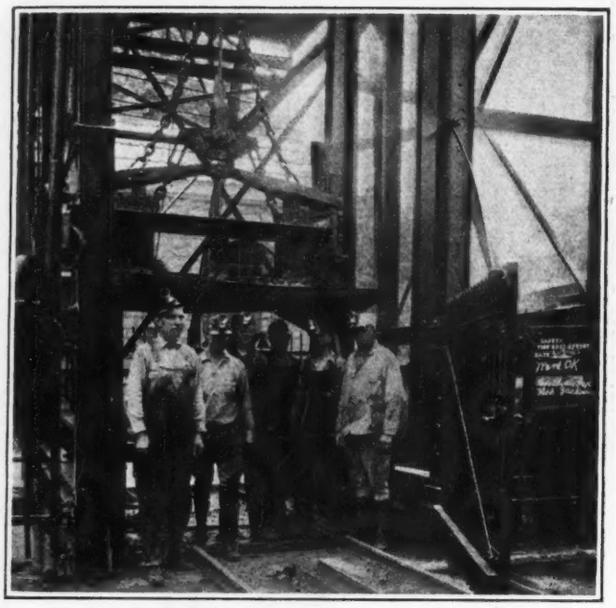
Automatic Conveyor Take-up at Mud Fork Mines

The coal here lies above the tipple and consequently retarding conveyors are used. Being of the retarding type the drives are at the head or top so that the load strand of the conveyor stays taut. But this design allows the return strand to hang loose. It is common practice to use a take-up screw to eliminate this slack. At these mines, however (Mines 15, 16, 17 and 18), slack is automatically taken care of by allowing the strand to sag down in a gap in the line of conveyor guides.

reloading station on the Ohio River, to which each day 6,000 tons of run-of-mine coal for steam and domestic use will be shipped by rail from the mines and reloaded into barges for reshipment to ports on the river, chiefly to Cincinnati where a rescreening plant is located. This is not a new venture of the Island Creek Coal Co. The new Huntington plant merely replaces an older plant from which coal has been shipped on the Ohio River for a number of years.

At the new Huntington reloading plant, railroad cars will be delivered one at a time by a steam locomotive to a cradle dump. After being dumped they will drift by gravity out of the dump. From the receiving hopper under the dump the coal will be fed to a belt conveyor and transported without further transfer to the river barges. This belt is 48 in. wide and the conveyor is 400 ft. long. The conveyor is arranged so that coal can be lowered to the barges with a minimum of breakage at any practicable stage of the river.

The rescreening plant at Cincinnati has a capacity of 3,000 tons per day. It is arranged so that the run-of-mine coal shipped from Huntington can be unloaded at any practicable stage of the river and reloaded as run-of-mine; or, after passing over a shaking screen, it can be lowered by loading booms into railroad cars as



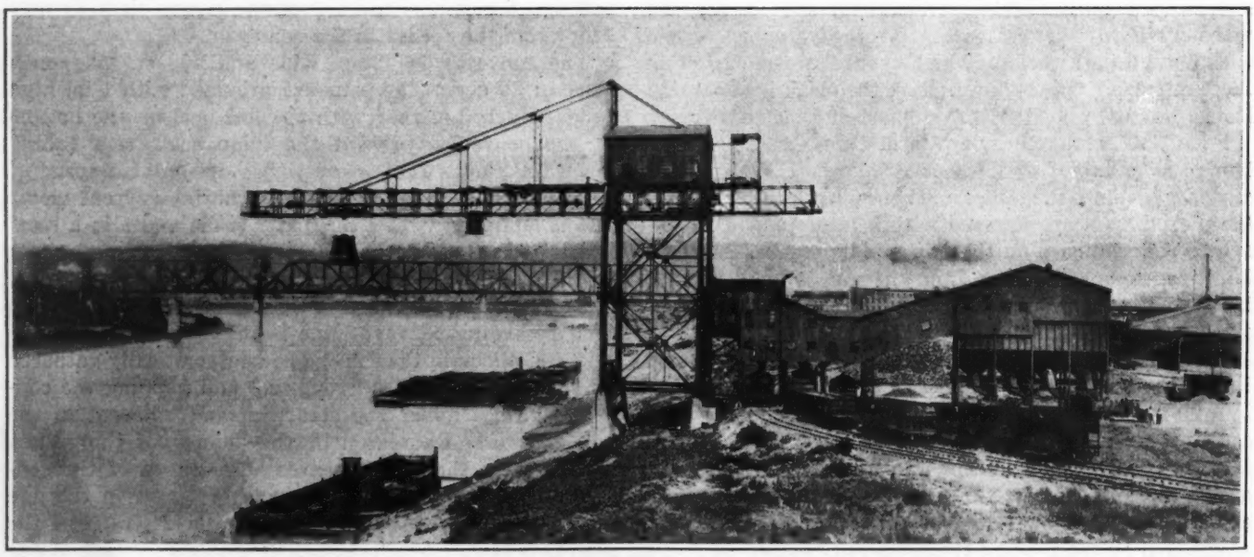
The Top of One of Island Creek's New Mines

This is at Mine 20. The company has only one other shaft operation: Mine 21 nearby. These two mines are just now getting into their production stride. At the right in this picture stands Supt. J. H. Madison, in almost spotless togs. He is the big boss of this mine.

lump and egg. If desired, run-of-mine, lump or egg can be carried to individual storage bins from which they are withdrawn and loaded into trucks serving local trade. This plant is electrically operated throughout.

Island Creek Mines Use Rock Dust

The company operating Island Creek properties believes thoroughly in rock dusting for protection. A good deal of experimental work has been done in the recent past and two dusting machines are on the job. A new campaign starts this fall before the approach of cold weather when moisture in the air will not be excessive as it has been in southern West Virginia all summer.



Rescreening Plant at Cincinnati Helps Handle Island Creek River Coal Business

About 3,000 tons of run-of-mine coal is shipped daily by rail from the mines to Huntington where it is reloaded into barges on the Ohio River and transported to this plant at Cincinnati for resizing. The plant has all the facilities of a modern mine tipple except picking tables which are not needed because refuse is removed at the mine.

Island Creek Number

"Wireless Mine" at Bartley Strives for Safety

New Operation of Pond Creek Pocahontas Coal Co. Has No Power Lines Underground Yet It Is 100 per Cent Electrified — Hoists 4,000 Tons Daily in 8-Ton Skips

By J. H. Edwards
Associate Editor, *Coal Age*,
Huntington, W. Va.

ON DRY FORK in McDowell County, W. Va., there is located a new mine, which, because of the high quality of the coal, the plans for large production, and a revolutionary step in safety, stands out prominently among the new operations of the country. The revolutionary step in safety puts the mine 100 per cent on a battery system of operation thus removing all power wires from underground. This mine is owned by the Pond Creek Pocahontas Co., which is controlled by the same interests as the Island Creek Coal Co. However, it is operated by its own local management.

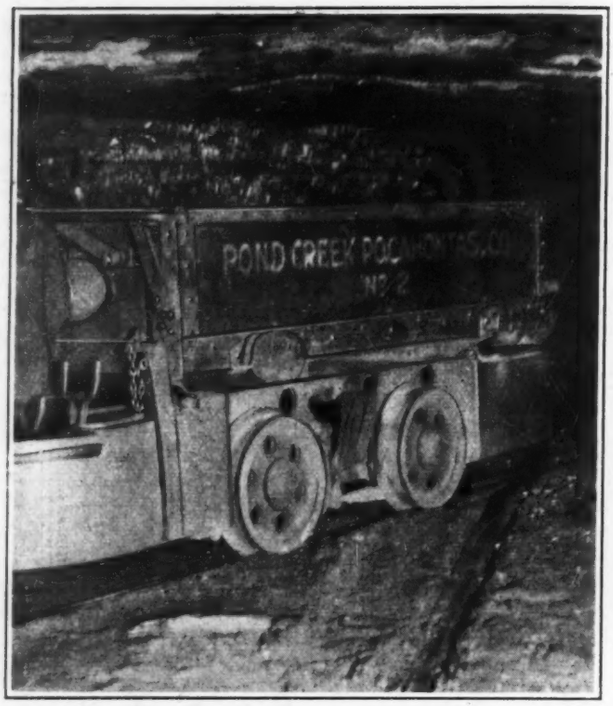
The coal mined is the Pocahontas No. 4 seam. A 585-ft. shaft, recently sunk at Bartley, taps the 2,600-acre tract which is owned in fee. Judging from the present showing in the mine, and from a number of core-drill test holes, the coal will average 6 to 6½ ft. over the entire tract. Except for a 1- to 2-in. streak of bone coal located about 2 ft. from the top, the seam is free of partings. In many places this thin streak of bone disappears entirely. Generally speaking, the roof is sandstone. The coal is of a friable nature, has a columnar structure, and is of exceptionally high quality. The latter characteristic is indicated by the following general analysis: Moisture, 1.06; volatile matter, 14.90; fixed carbon, 79.58; ash, 5.52; sulphur, 0.60; B.t.u., 15,000. The high purity makes the coal one of many uses and consequently of constant demand.

In the headpiece are shown the headframe and four-track steel tipple. The shaft is 585 ft. deep to the coal with an additional 65 ft. below to accommodate the car-dumping and skip-loading machinery. The rated capacity of the hoisting equipment and of the tipple is 4,000 tons per day.

Considering the conditions, and the number of problems to be worked out, rapid progress has been made in developing the Bartley mine. Although the main skip shaft was not put into use until June 16, the mine had shipped 150,000 tons of coal by Aug. 1. The equipment is designed for a capacity of 4,000 tons per day. The supply shaft was sunk to the coal, Aug. 1, 1924. From that date until Dec. 1 the coal was hoisted by bucket, then in mine cars on the single cage of the supply shaft until the starting of the skip hoist at the main shaft. The first cutting machine was put into use in December, 1924, and the first locomotive in January, 1925.

Mention of the inside equipment brings up one of the main features of Bartley shaft. It is a "wireless mine," yet the electrification is 100 per cent. Storage batteries are used exclusively for cutting, gathering and hauling. No trolley wires are in the mine and none of the tracks are bonded. This progressive step was taken in the interest of safety. The battery compartments, mining machines, and locomotives are all of the type approved by the U. S. Bureau of Mines as permissible for use in gaseous mines. A more complete description of this equipment will follow later in this article.

Both the main and supply shafts are concrete-lined through their entire depth of 585 ft. The supply shaft is 14 ft. x 27 ft. 6 in. and is divided by a concrete partition, one side being used for air and the other as a compartment for the single cage of the men-and-material hoist. A water ring, sump, and pumping station are located 230 ft. from the top. The water from this



Gathering Locomotive in the "Wireless" Mine

In this mine there are no trolley wires or machine-feeding lines, and none of the tracks are bonded. The battery in this locomotive consists of forty-eight 33-plate, lead cells and is rated at 480 amp.-hr. and 46 kw.-hr. The single motor of this locomotive is connected to both axles by worm gearing.

ring furnishes the domestic supply for the town. It is pumped from the sump to a high tank by a 60-hp. 4-stage centrifugal pump.

The main or skipshaft is 9 ft. x 26 ft. and is excavated to a depth of 65 ft. below the coal. Bottom-discharge skips of 8-tons capacity are used. The equipment at the bottom of the shaft consists of a one-car rotary dump, a 5-ton weigh hopper, and a skip-loading hopper with air-operated gates. A motor-driven car spotter feeds the trip through the rotary dump, and "hikers" located at points on the entry about 300 ft. in each direction from the dump provide added facilities for handling cars. The controls of the dump and of the other bottom equipment are grouped and interlocked so that but two men are required on the bottom.

Both the skip and supply hoists are of the geared type with plain cylindrical drums. The brakes which are set by gravity, are released and controlled by oil pressure. Weighted accumulators operating in connection with automatic pumps keep the pressure at a constant value. Wound-rotor, 2,300-volt, induction motors are used on both hoists, that on the supply hoist being rated at 250-hp., and the one on the skiphoist, 500-hp. Controllers geared to the drum shafts provide complete protection against all conditions of failure of the engineer to operate the hoist properly, and against other conditions such as overspeed due to a broken motor shaft. The duty cycle of the large hoist is as follows:

Weight of skip, lb.	21,800
Maximum weight, material per skip, lb.	17,000
Total lift, ft.	690
Maximum rope speed, ft. per min.	688
Number of trips per hour (max.)	42.4
Time to accelerate, sec.	10
Time at full speed, sec.	50
Time to retard, sec.	10
Time to dump and load, sec.	15

In actual operation it was noted that when hoisting a skip containing three cars of coal (about 10 tons), the motor takes a peak of 250 amp. at starting, an average of 125 amp. during the first part of the hoist, and drops to around 90 amp. near the end of the run. The full load rating of the motor is 132 amp. Power for operating this and other equipment is purchased.

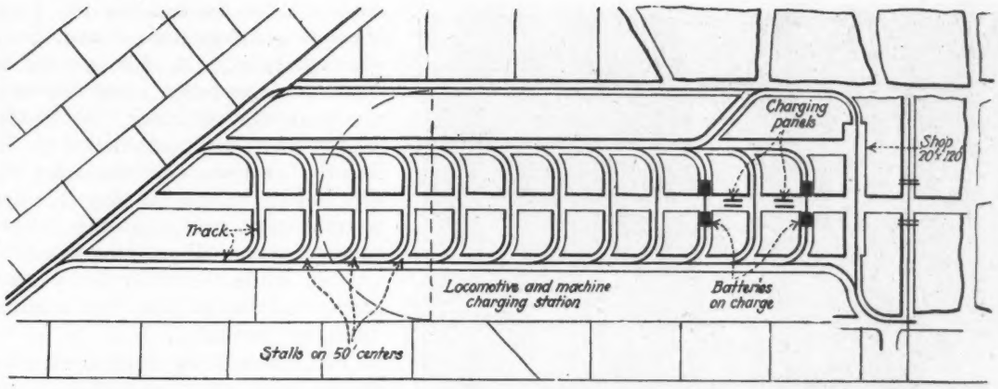
The four-track steel tipple at the Bartley mine is a model among those of its class. The floors and walkways are of concrete, and all shafting, gears, and other dangerous parts are inclosed by guards of sheet metal or wire screen. The tipple is equipped to load four sizes, three of these passing over picking tables and loading booms. By a simple arrangement of cross-conveyors the three sizes of picked coal and the slack can be reassembled when it is desired to load run-of-mine. The refuse from the picking tables is conveyed to a bin from which it is disposed of by a motor-driven, self-dumping larry.

On the Move

Arcwall machine traveling to the next place. The electrical equipment of this machine is approved by the Bureau of Mines as permissible for use in gassy mines. Power at 250 volts to operate the machine is supplied by a battery mounted on a self-propelling truck. The coal in the Bartley mine averages 6 to 6½ ft. in thickness, and the only impurity is a 1- to 2-in. streak of bone in which this machine cuts about 2 ft. from the top. In many places this parting disappears entirely.

Shop Plan

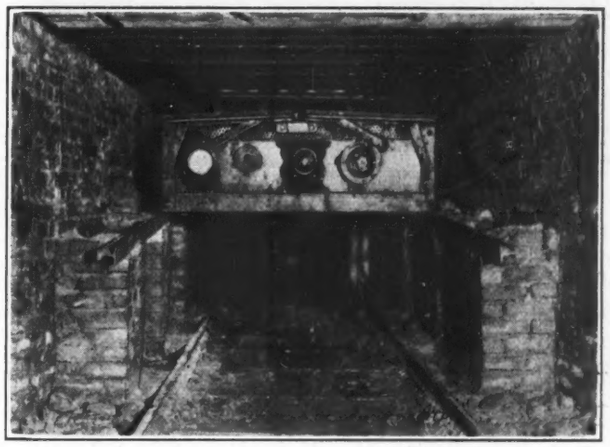
Here all batteries are charged. The compartment containing a discharged battery is deposited in one stall and a compartment containing a charged battery picked up in the adjoining stall. Power for moving the chassis from one stall to the other is furnished from the battery through a portable transfer cable.



The driving equipment of the tipple consists of seven alternating-current motors aggregating 122 hp. All of these, except the three of 5-hp. size on the boom hoists, are of the wound-rotor type. One of 30-hp. drives the three picking tables and the three loading booms. Another of the same size drives the cross-feed and mixing conveyors, and a third, the shaker screens. The remaining motor, of 7½-hp. rating, operates the feed hopper. Drum controllers in combination with magnetic line contractors are used on the one 7½-hp., and on the three 30-hp. motors.

The 12-x5-ft. mine fan is belt-driven from a 150-hp., 585-r.p.m., wound-rotor induction motor. It is the intention to install later a 300-hp. motor on this fan. Because of lack of room this will have a chain drive. The 150-hp. motor will be left in place to serve as a spare. Auxiliary power, operating the fan in case of failure of purchased power, is provided by an 8-cylinder, 1,200-r.p.m., 300-hp. gasoline engine directly connected to a 125-kw. alternator. This emergency power unit can be used for operating the men-and-material hoist at a reduced speed.

Direct current for charging batteries and for operating the slate larry is supplied by a 275-volt, 300-kw., synchronous converter located in a room adjoining the supply hoist. Positive and negative feeders, each of 500,000 circ.mil carry the direct current through the supply shaft to the battery-charging stations. For this duty, single-conductor, standard borehole cable is used.

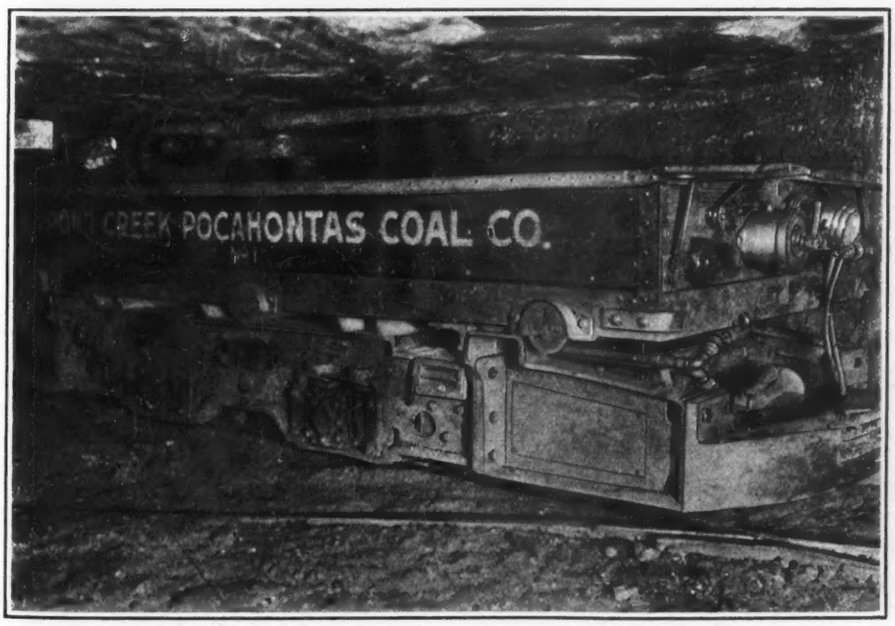


A Locomotive Battery on Charge

One of the temporary charging stalls is shown. It was used before the permanent stations were completed. More room is provided in the permanent stations. In order to load this battery compartment, the chassis of the locomotive is run under it, then backed out pulling the compartment along. As the compartment runs down the sloping side rails it settles down into operating position on the chassis.

This is insulated with varnished cambric, is lead covered, and armored. The cables, each 585 ft. in length, are suspended at the top of the shaft by clamps.

The same type of cable—except that it is three-conductor—and the same method of support are used for carrying the three-phase, 440-volt power to the pumps



"Canned" Energy for Cutting

Each mining machine is followed by one of these power trucks. The battery consists of 110, 31-plate lead cells and is rated at 450 amp.-hr. and 99 kw.hr. This is sufficient energy to operate a mining machine during a full shift. The chassis of this power truck is worm-driven from a single motor. The unit, including the battery compartment, is approved by the Bureau of Mines as permissible.

The Skip Dumps Its Load

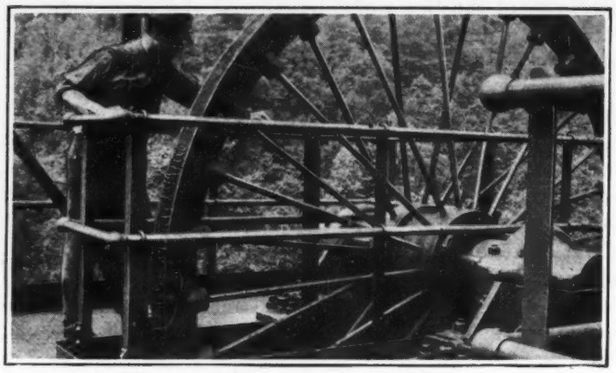
The open gate of the bottom-dumping skip is shown. One of the advantages of this type of skip is that the entire weight is available for counterbalancing the loaded skip as it leaves the bottom. This reduces the power required at starting. To the left can be seen the curved, gate-opening guide of the other skip compartment.

at the water ring and at the shaft bottom. A similar three-phase cable installed in the skip shaft conducts power to the bottom for operating there the seven 440-volt motors capable of developing 262 hp. These motors consist of the following: A 25-hp., wound-rotor driving the rotary dump; a 20-hp., wound-rotor driving the car spotter; two 25-hp., wound-rotor driving the "hikers"; a 7½-hp., wound-rotor operating the weigh; a 150-hp., squirrel-cage driving a centrifugal pump; and a 10-hp. vertical, squirrel-cage driving a centrifugal deep-well pump. This pump raises the water from the pit in the bottom of the shaft to the mine-level sump. The motor is located on a level with the coal and so is above danger in case of flooding of the pit.

Since there are no trolley wires in the Bartley mine the electrical energy for operating the locomotives and mining machines is carried "on wheels" rather than on wires. A storage battery forms a part of each locomotive and coal-cutting unit.

At present, because of the comparatively short hauls, no main-line locomotives are used in the mine. The gathering locomotives deliver the loads directly to the shaft bottom. On this service there are in use five 7½-ton, single-motor, worm-driven locomotives, geared for a speed of 3½ m.p.h. The battery compartments are of the quick-demountable type. Ten of these compartments, complete with batteries and fixtures, make up the power equipment for the five locomotives. This arrangement necessitates no shutdown of the locomotives for charging. One battery is at the charging station while the other is in use. After a locomotive arrives at the station, but a minute or so is required to change batteries.

The coal-cutting equipment consists of two arcwall plates each. The ampere-hour rating is 480 and the kilowatt-hour rating 46. This capacity is sufficient for a full shift. The normal size of trips is five cars, but



Inspecting the Sheave Wheels

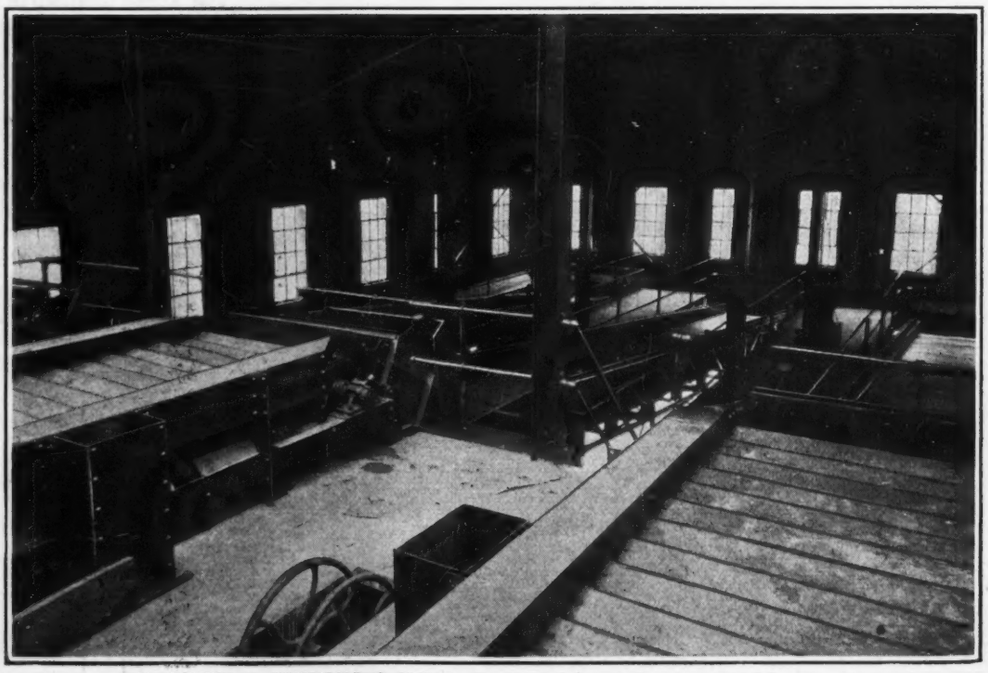
These bicycle-type head sheaves are 10 ft. in diameter. The bearings are of the ring-oiled type with large oil cellars, so they need little attention.

a locomotive can pull ten or twelve cars. The cars are of 3½ tons capacity and the empty weight of each is approximately 2 tons. They are of the steel-body, wood-bottom type, equipped with open-end roller bearings.

The coal cutting equipment consists of two arcwall mining machines and two complete, self-propelling power trucks. A power truck is made up of two main

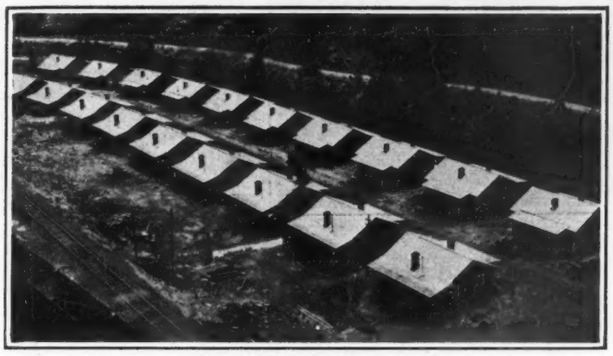
Well Lighted Tipple

Picking tables in the foreground and loading booms leading down through the concrete floors to the tracks are intended to handle nut, egg, and 4-in. lump. The photograph from which this illustration was made was taken just before the tipple went into service. The numerous windows directly above the picking tables and around the walls of the tipple give ample light to aid men to load clean coal.



parts, a chassis and a quick-demountable battery compartment. The chassis is worm-driven from a single motor. The truck carries a 110-cell, 31-plate battery having an ampere-hour rating of 450 and a kilowatt-hour rating of 99. This capacity is sufficient to operate the mining machine while cutting at least thirty places —which means a full shift—and to propel the power truck to and from the charging station, and the truck and machine from place to place.

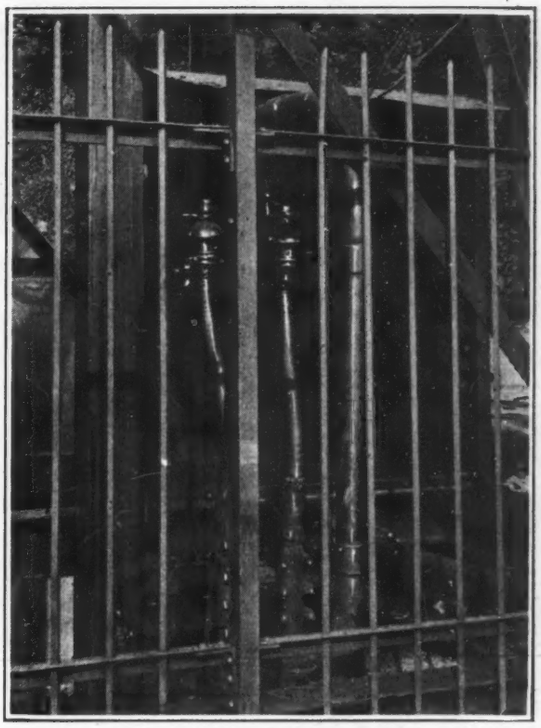
The accompanying sketch indicates the permanent arrangement of the underground shop and of battery charging stations which is now being worked out at the Bartley mine. At the end of a shift a locomotive power truck will unload its battery onto the charging rails in one stall, then pick up a charged battery in the adjoining stall. A heavily insulated transfer cable will be used as a conductor from a battery while the chassis is moving to an adjoining stall.



Part of the Mining Town

This view was taken from the top of the headframe showing one group of the new houses of the Pond Creek Pocahontas Co. Level ground is scarce in the mountains of West Virginia, so every available space has to be utilized for buildings. Note that on the other side of Dry Fork creek there is room only for the highway.

Although the primary object in using storage-battery power for cutting is to eliminate the danger of the ignition of gas or coal dust by open wiring, there are several other advantages afforded by battery operation. The most important are: More places can be cut per shift because of constant voltage because power is continuous and no time is lost in making and repairing electrical connections, there is a saving in the elimination of wires and bonds, and the peak load on the power system is reduced.

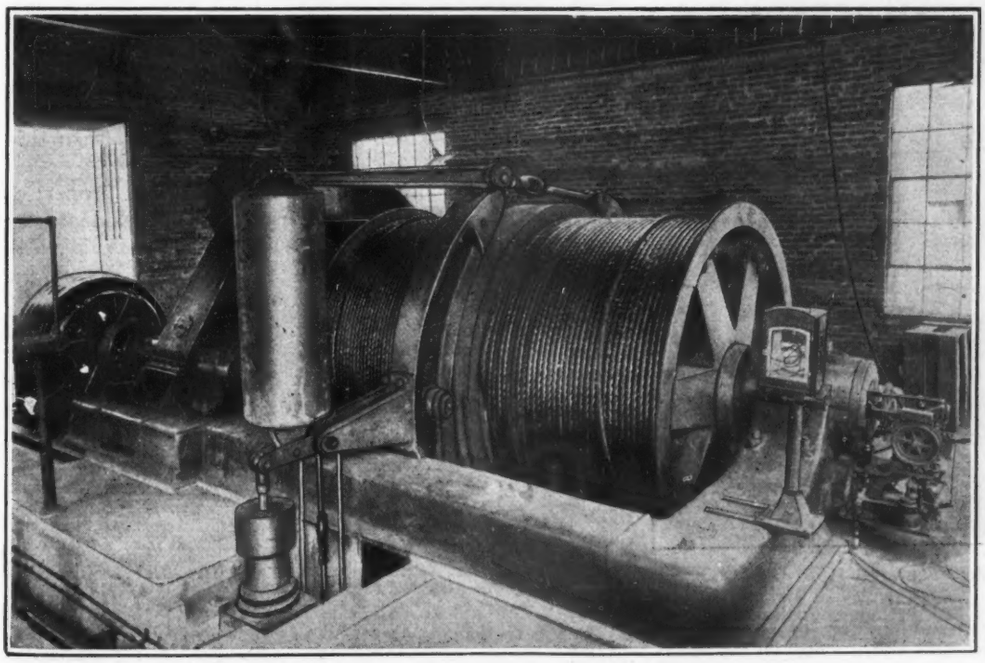


Where the Power Goes Down

The two 500,000-circ. mil, 250-volt, armoured cables each 600 ft. long are suspended by clamps at the top of the supply shaft. These cables carry current to the battery-charging stations inside the mine.

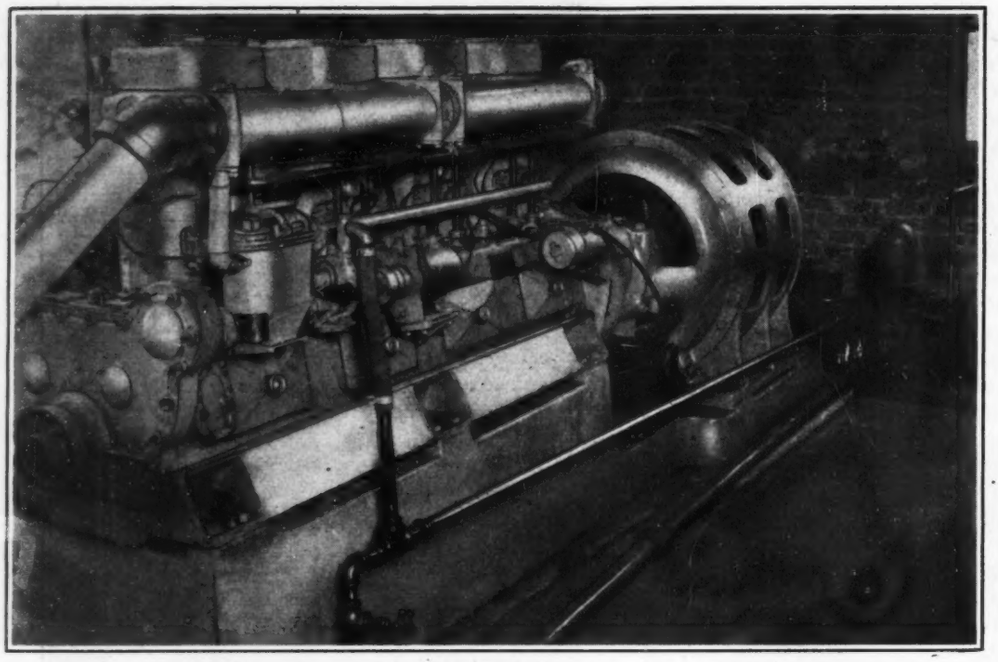
Mining methods at Bartley are not out of the ordinary. No mechanical loading has been attempted, and there is no intention of adopting longwall methods. The coal is cut at a point about 2 ft. from the top and is loaded out in two benches. Shot firers are employed to load and shoot the holes which are drilled by hand by the miners. One shot firer serves ten or twelve miners.

The firing is done by electricity from permissible



Main Hoist

Although the total lift is 690 ft. and 8-ton skips are used, a motor of only 500 hp. is required for hoisting the rated capacity of 4,000 tons per day. The hoist brake is set by the large weight in the foreground and is released by oil pressure. At the right is a controller geared to the drum shaft.

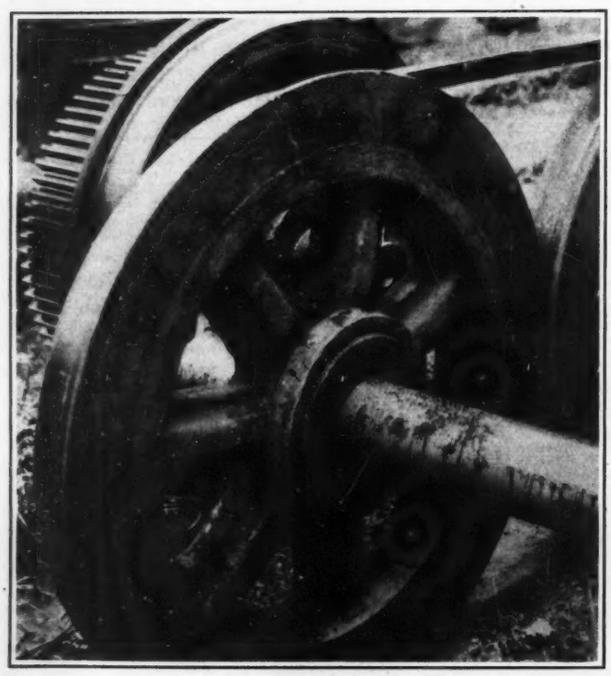


Standby Power

In case of failure of purchased power, this 300-hp. gasoline engine directly connected to a 125-kw. alternator generates power at 2,300 volts to drive the mine fan and supply hoist. At the right is a 2¾x 2½-in. single-cylinder pump driven by a 2-hp. motor. This pump supplies cooling water to the engine.

attachments on lamps. The two benches of the 12-ft. face are brought down by four rib shots. Ordinarily one stick of permissible is used in each of the top holes but in many places as little as half a stick suffices. In the bottom bench three sticks are used for the breaker shot, and two sticks on the other side. The shots are fired one at a time and the coal from the first shot in each bench is loaded before the next shot is fired.

With its excellent coal, up-to-date equipment, safe but efficient methods, and good management, the Bartley mine bids fair to be one of the prize operations of the Pocahontas field.



Collar Holds Fractured Hub

When wheels turn on their axles the axles are built up and then turned down to a snug fit. In applying the wheel under heavy pressure the hub is sometimes strained. To overcome this defect the Island Creek Coal Co. shrinks a collar on the hub.

These Men Made Island Creek Mines Important

The Island Creek Coal Co. dates back to 1902 when the organization of Boston and Cleveland capital was effected. The company was started in order to develop certain Logan County, W. Va., coal land which formed the nucleus of the great holdings of today centering at Holden. A. F. Holden of Cleveland, engineer and financier, was made president of the company and held this office until his death in 1913. In 1907 T. B. Davis had become vice-president in charge of operations and he it was who succeeded Mr. Holden. He has been in active charge of affairs for the company ever since.

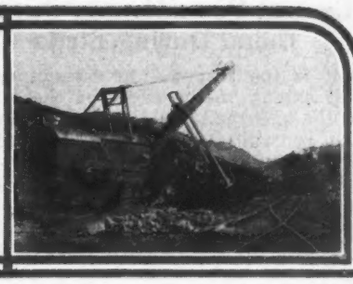
The same group of men organized the Pond Creek Coal Co. in 1911 and operated the property owned by that company until December, 1922 when it was sold to the Fordson Coal Co. Almost immediately thereafter, substantially the same men formed the Pond Creek Pocahontas Coal Co. to build and operate the so-called "Wireless Mine" at Bartley which is described in the last leading article beginning on page 359 of this issue of *Coal Age*.

The local management of the Island Creek properties is in the hands of James D. Francis, vice-president, and A. R. Beisel, general manager, at Huntington, W. Va., where are the head offices of the company. Both these men have been with the company for a number of years. Vice-President R. S. McVeigh of Cincinnati, Ohio, is in charge of sales.

The steady growth of the Island Creek Coal Co. is reflected in the mounting annual output of the mines since 1905 as shown in this table:

Year	Tons	Year	Tons
1905	147,703	1916	2,280,661
1906	351,541	1917	1,933,805
1907	691,547	1918	1,891,375
1908	941,036	1919	1,781,413
1909	1,220,326	1920	1,795,077
1910	1,665,668	1921	3,240,993
1911	1,876,446	1922	3,144,423
1912	2,039,887	1923	3,152,919
1913	1,916,100	1924	4,951,403
1914	2,207,444		
1915	2,213,616	Total	39,443,383

News Of the Industry



Second Week of Anthracite Strike Finds Both Sides Standing Firm; Union Bitterly Opposes Arbitration

The first week of the anthracite strike has passed with neither operators nor miners showing the slightest intention of receding from the positions that deadlocked the wage negotiations at Atlantic City, N. J., last month. On the eve of the suspension Major W. W. Inglis reiterated his conviction that the strike was wholly unnecessary and that the contention that the miners could not continue work without a contract was a relic of the dark ages of trade unionism. Union leaders interpreted this as another demand that they submit to arbitration and made no concealment of their purpose to oppose to the limit of their resources the successful termination of a "strike to end future strikes," as the operators' attitude has been defined.

No comment was forthcoming from union headquarters at the Bellevue-Stratford Hotel, Philadelphia, Pa., on the action of certain of the operators in the region in canceling the credit privilege to strikers trading at company stores. Nor did President Lewis and his aids express any concern over reports of friction between some of the local unions and the operators over the employment of maintenance men. All such difficulties, it was stated, would be amicably ironed out under the terms of the agreement entered into at Philadelphia on Aug. 28.

Strike 100 per Cent Effective

Both sides agreed that the suspension was 100 per cent effective. On behalf of the operators it was pointed out that the wording of the Pennsylvania mining statutes requiring two years' experience before certification made the employment of strike-breakers impossible. Moreover, they denied entertaining any intentions of attempting to operate open-shop. On its side, the union also declared itself against separate agreements with individual operators. District No. 1 reported to Philadelphia that one company had offered to sign up a contract embodying the demands in the Scranton tri-district convention platform, but the offer was declined.

Newspaper stories that the miners might again push the nationalization program, quietly sidetracked as soon as John Lewis came into power in the United Mine Works, were met with a prompt denial. In a statement made public Sept. 3 Mr. Lewis denied that the revival of the discussion had originated with the miners. "It is John Hays Hammond and not the mine workers who proposes that the federal administration shall cast overboard its policy of non-interference with business. It is Mr. Hammond who proposes that the Republican majority in Congress shall depart from its traditional policy and through legislation establish a semi-regulation of the anthracite industry.

Lewis Points Out Hammond

"Surely the astute Mr. Hammond should appreciate that the investment bankers of New York and Philadelphia who control the anthracite industry do not desire the prying hand of Congress to bare to a scornful public gaze the amazing profits which they are taking from a natural monopoly of a public necessity. Mr. Hammond should also know that the federal Congress cannot differentiate between anthracite and bituminous mines when dealing with the basic necessity of coal. It is obvious that any legislation enacted by Congress dealing with anthracite must similarly be superimposed upon the bituminous industry. Such a contingency would be decidedly embarrassing to such friends of Mr. Hammond as the Pittsburgh Coal Co., the Consolidation Coal Co., the Bethlehem Mines Corporation and the B. R. & P. Coal interests, all of whom have torn up their agreements with the United Mine Workers."

The reference to these bituminous companies marked the limits of official comment upon the rumors that the union planned to call a soft coal strike in sympathy with the anthracite miners and to force the government to get behind the Jacksonville agreement. A direct statement on this contingency was refused. To questions whether the anthracite strike could be made fully effective without the co-operation of the bituminous miners, union spokesmen returned the enigmatic response: "Well, we seem to be going on the belief that it can, don't we?"

Neither side made any predictions as to the duration of the tie-up. The operators have been pounding upon the demand that the next agreement should contain provisions that would make future suspensions impossible. They have also launched a daily advertising campaign in the regions showing the markets and the money lost by the suspension. Union leaders express themselves so bitterly against arbitration that they convey the impression that they are willing to hold out to the last ditch on that question.

Governor Pinchot Silent On Strike Mediation

Governor Pinchot of Pennsylvania has not intimated what, if any action, he intends to take regarding the anthracite strike. He is now touring the state, making an inspection of the state and semi-state institutions, and during his absence state officials are powerless to act.

Secretary of Mines Walsh has not communicated with the Governor since his return as one of the Governor's official observers at the Atlantic City conference of the operators and miners. Secretary of Labor and Industry Lansburgh has not heard from the Governor, either, since his recent return from a month's vacation.

"The Bureau of Industrial Relations of the Department of Labor and Industry," said Secretary Lansburgh, "has in effect offered its services as a mediator by being represented by David Williams at the Atlantic City conference. The bureau has no authority in law to force itself upon the contending sides. It cannot go before them unless mediation is desired."

Burns Brothers Absorbs Four Coal Firms

Directors of Burns Brothers, New York, approved plans Sept. 2 for the acquisition of one wholesale and three retail distributing coal companies. The properties to be acquired are the Wyoming Coal Co., the Steamship Fuel Corporation, the Schuylkill Coal Co. and the Temple Coal Co. The consolidation extends the sphere of operations throughout the metropolitan district and into New England, as well as other sections, it was said.

The Wyoming and the Steamship Fuel Corporation are the largest of the four companies in the acquisition. Both are owned by the S. A. Wertheim and affiliated interests. The Steamship Fuel Corporation is a wholesale company, selling to retailers in all North Atlantic States, with piers at Norfolk and New York. The other companies are retail distributors.

Payment will be made from the Burns A and B stock, heretofore unissued. No financing will be required.

Central Pennsylvania Output Gains During Strike

It is too soon yet to determine the full extent of the effect of the strike in the anthracite field on production in the central Pennsylvania bituminous field, as figures for August only are available. The loadings for last month were 60,350 carloads, as compared with 54,606 for July. The seasonal increase accounts for a portion of this but the strike has had its effect as is reflected in the number of idle mines being put into operation and the fact that operators are advertising for miners.

On the present basis, the field is producing 60 per cent of its normal capacity. The district can supply 40,000 carloads, or 2,000,000 tons, additional per month.

Mine No. 1 of the Stineman Coal Co. resumed operations on Sept. 1 with 100 men. The mine had been idle two months. The same company's No. 4 mine resumed a week earlier and is now working at 50 per cent of capacity. Increased output is reported at the Ehrenfeld operations of the Pennsylvania Coal & Coke Corporation. These mines are working three and four days a week after having worked only one and two days for several months. The Barnes-Tucker Coal Co., at Barnesboro, has increased its output during the past two weeks.

The Thermal mines of the Cosgrove-Meehan Mining Co., located at Acosta, Somerset County, recently purchased by a New York firm, have been placed in operation. It is reported that a large contract has been signed with one of the largest public utilities companies in New York, providing for a large tonnage over a period of three years. The daily capacity of the two mines, which are equipped with modern screening devices, is 1,000 tons daily. At the Foustwell mine of the Cosgrove-Meehan company the output has been doubled. This is said to be one of the best substitute coals produced to replace anthracite.

At Nant-y-Glo and Vintondale production is back almost to normal.

Fire in Omar Mine Sealed; May Burn for Year

After a week of ceaseless work directed by Chief Mine Inspector Lambie and District Inspector J. F. White, employees of the West Virginia Coal & Coke Co. succeeded on Aug. 27, in sealing off the fire in the No. 4 mine of the company, at Omar, W. Va. Sixty concrete block brattices were built around the three hundred acres of pillar territory affected by the fire, which was caused by the wrecking of a loaded trip and the consequent short-circuiting of power wires.

It is thought by engineers that at least a year will be necessary to completely smother the fire. In the meanwhile the mine will be operated by routing the coal around the fire area.

No. 4 mine was the largest of the mines recently acquired by the West Virginia Coal & Coke Co. from the Main Island Creek Coal Co., having a daily capacity of 2,000 tons. Much valuable equipment was lost.

Name Commission to Probe British Coal Industry

Appointment of the Royal Commission of Inquiry which will investigate the coal situation in Great Britain was announced by the government Sept. 3. The commission consists of Sir Herbert Louis Samuel, former Home Secretary, as chairman; Sir William Henry Beveridge, an authority on economics and employment; General Sir Herbert Alexander Lawrence and Kenneth Lee, who has held many important posts having to do with trade and commerce. They will be assisted by several expert assessors, including William Brace, chief labor adviser to the Mines Department, while the secretary of the commission will be C. S. Hurst, Assistant Under Secretary of the Mines Department.

The commission will, according to the announcement, "inquire into and report upon the economic position of the coal industry and conditions affecting it, and make any recommendations for the improvement thereof," as promised by the government when it granted a subsidy in order that the mines might continue to pay current wages. This action prevented a general strike on Aug. 1. The subsidy cost the government about £860,000 in the first month, although coal output was somewhat less than normal. The subsidy will continue in effect until next May, when the commission is expected to be ready to make its report.

Carbonized Coal Rates Stand

The Interstate Commerce Commission has declined to suspend tariffs of the Illinois Central and other railroads serving the southern Illinois district, naming the same carload minima and rates as apply on lump coal to the movement of carbonized coal, effective Sept. 1. The rates on this product were established at the solicitation of the Old Ben Coal Corporation, which has been experimenting with low temperature distillation for several years and hopes to develop a market for the new fuel. The establishment of the rates was opposed by coke producers and coal operators in other parts of Illinois, in Arkansas and Oklahoma.

As a part of a campaign launched recently to take every possible advantage of an opportunity offered by reduction of freight rates from southern West Virginia to New England on low-volatile coals and to create new markets in New England for West Virginia bituminous grades, the services of the committee on mines and mining of the Chamber of Commerce of Huntington have been tendered Governor Gore of West Virginia and the secretaries of five coal operators associations in southern West Virginia. John E. Norvell, chairman of the committee, suggested that the state Department of Mines might be able to assist in the campaign of education in New England.

Murray Charges Conspiracy Against Miners' Union

Pittsburgh, Pa., Sept. 8.—A Labor Day audience at Bridgeville, Pa., listened impassively to Philip Murray, of Pittsburgh, international vice-president of the United Mine Workers, declare that the Pittsburgh Coal Co. had joined a conspiracy with three of the largest coal producers of the United States to destroy the union and not to seek economical production. Murray named the Bethelhem Mines Co., the Rochester & Pittsburgh Coal & Iron Co. and the Consolidation Coal Co. as the other members of the "combination."

The Pittsburgh Coal Co. had announced but a day before that, in order to provide accommodations for the increasing number of workers at Banning No. 2 mine, where the 1917 scale is being paid, the company would move idle miners' families to houses of the company at other mines free of charge. On Saturday the mine had 202 men working and produced 563 tons of coal.

The Pittsburgh Coal Co., Mr. Murray maintained, was producing coal at a cost of $22.50 a ton and was employing men picked up in a drunken condition in Pittsburgh streets. Mr. Murray said in part:

"If the Pittsburgh Coal Co. succeeds in its policy of wage depreciation, its effect will be felt most keenly in the business centres of mining communities. Go down to Banning and you will find twenty-five deputies, each armed with a gun, driving union men away."

No Decision on Rate Fight

No decision as to final action to be taken in combating the recent order of the Interstate Commerce Commission establishing joint through rates from the low-volatile districts of West Virginia to New England and Middle Atlantic states was reached at the second conference of northern operators and railroads held at the Bellevue-Stratford Hotel, Philadelphia, Pa., Sept. 2. There was, however, further consideration of the three lines of possible procedure outlined in the preceding issue of *Coal Age*.

Interested operators from the central Pennsylvania, Pittsburgh, Somerset and Upper Potomac fields are still hopeful that they can persuade the carriers to join with them in their protest to the Commission. To that end a committee of eleven operators, headed by J. W. Searles, president, Pennsylvania Coal & Coke Corporation, met with the coal traffic executives of the New York Central, Pennsylvania, Baltimore & Ohio, Western Maryland and Reading Railroads and also plans to hold another conference with the same officials early this week.

The Northern producers declare that they are in a position to ship 3,500,000 tons of low-volatile and 1,500,000 tons of high-volatile coal suitable for domestic purposes into the New England and Middle Atlantic territory every month. Some discussion was had as to the best way in which to bring this before the coal-consuming public. Formulation of a definite publicity campaign, however, has been held in abeyance.

Prompt Recourse to Substitutes Urged as Surest Means to Avert Hard-Coal Panic and End Strike

By Paul Wooton
Washington Correspondent of *Coal Age*

Now that the opposing forces in the anthracite industry have dug in for what promises to be a long-drawn out struggle, officials and others in a position to serve the public in this crisis are much concerned because of the failure of anthracite-consuming regions to stock up with substitutes. Despite the fact that every day is precious, the movement of substitutes is slow.

When it is considered that anthracite is consumed in the winter at the rate of 7,000,000 tons a week, it means that large tonnages of bituminous coal and coke even now should be moving and orders should be rolling in at a much faster rate than the producers of substitutes report. This attitude is just what John Hays Hammond warned against in his interview when he advised consumers to take the middle ground between panic and lethargy. They have avoided panic, but have fallen into lethargy.

Consumers Have Responsibility

It is quite apparent that consumers have not been made to realize that they have a responsibility in this situation. Moreover, dangerous doctrine is being spread broadcast. Some of it is being attributed to the President, thereby assuring its publication everywhere. From the accurate knowledge here of the President's views on the coal question it is regarded as practically certain that he has said nothing to justify such an interpretation of his utterances as the following, which appeared in a Washington newspaper:

"A word of caution from President Coolidge to the people who use hard coal:

"Don't rush into the market and buy a big supply of coal. By doing so you will be contributing to a shortage and thereby provide conditions which operators and miners likely seek.

"The President's attitude on the coal strike was stated for him at White Court yesterday. There is plenty of hard coal in sight, he understands. The public can stand a long strike. He will start the necessary wheels of the government moving to provide a continuous supply. When Congress convenes he will ask for the passage of legislation to deal with the situation, if it is then acute. But he hopes the people will not be run off their feet and make the situation serious by heavy buying."

This is typical of what the people are hearing. It encourages them to think that they will be taken care of. In meeting this strike the one great need and the thing most difficult to bring about is to start buying of substitutes. No one will buy substitutes if convinced that "there is plenty of hard coal in sight" or that "the public can stand a long strike" or when assured that the President "will start the necessary wheels of the government moving to provide a continuous supply." It is natural for the consumer who is unacquainted with the inner workings of coal distribution to be influenced by the advice he receives on every hand.

On paper, nothing is simpler than to set forth the availability of adequate supplies of substitutes. This can be done even in New England—that ear of the country which sticks out to the northward and always is the first to feel the frost. With large available surpluses of byproduct coke, of low volatile coal, of medium volatile coal, and of high volatile lump, it would seem simple to provide substitutes indefinitely. The trouble is that the potential supply of bituminous coal and coke is powerless to affect the situation until it is in the consumer's bin.

The great problem that faces the fuel committees in New England, in the Northwest and elsewhere is to induce the consumer to buy substitutes before it is too late. Those who understand the situation thoroughly agree that this buying must begin at once. If the total movement of substitutes needed can be spread over seven months, they can be provided relatively easily, but if buying is delayed until winter sets in and then a sudden call goes forth for 15,000,000 tons or 20,000,000 tons of substitutes in one month, it will be found that they cannot be delivered and prices will be pushed to the anthracite level or even higher.

The duty of the New England fuel committee is plian. They should make a budget of the normal rate at which anthracite is delivered to consumers. If, for instance, that rate for Massachusetts is 100,000 tons a week, then the committee should see to it that 100,000 tons of substitute move into cellars of that state each week.

Time Required for Preparation

There is another reason for placing orders for substitutes at once. The mines in the territory tributary to New England will have to make special preparations to size and clean their coal in a form suitable for house use. The smokeless and medium volatile coals of central Pennsylvania, Somerset, Georges Creek and southern West Virginia make a fine domestic fuel when specially prepared, but ordinarily the demand for that purpose is too small to justify the equipment necessary. More than 90 per cent of the coal from these districts normally moves as run-of-mine.

The facilities developed by the producers in the Pocahontas and New River districts are absorbed largely in supplying Western trade. It is true that a number of producers in the region on which New England must rely equipped themselves with screens and picking tables after the strike of 1922, but their total capacity for preparation of suitably sized domestic fuel is comparatively small. If put to work now they can go a long way toward meeting the demand, but there are no reserve facilities with which to handle any peak in the demand.

To ship mine-run for domestic use would be disastrous to the hopes of the bituminous producers who seek to build a permanent market for their fuel. One season's experience with mine-run coal will confirm the anthracite habit.

Substitutes Would Hasten Peace

There is still another major reason why buying of substitutes should begin now. If the anthracite belligerents were to see that as much as 2,000,000 tons of substitutes actually are going into the bins of consumers each week, with the consumers pledged to receive a similar amount as long as the anthracite mines are closed, it would do more to hasten the settlement of the strike than would all the suggestions for arbitration or threats of investigation by congressional committees.

It is suggested that the local fuel committees can help the situation materially if they will urge producers and dealers in substitutes to co-operate so that full-time fuel experts are provided in each community to go from house to house where substitutes are to be used to demonstrate how they should be burned.

The committees also should arrange, fuel specialists in Washington point out, to have a consulting service to which the consumer could apply for advice as to the form of substitute best adapted for use in his furnace.

It also is regarded as imperative that fuel committees understand that in this emergency they are simply to supplement the regular machinery of supply and distribution. Their rôle is to arouse the consumer's interest to the point where he will commit himself at the earliest possible date to a definite order for substitutes.

In all this a great opportunity is knocking at the door of the bituminous coal trade. If it contributes constructively to the solution of this emergency, it can add materially to its market and can checkmate the demand for regulation of the coal industry.

Canada Gets Welsh Anthracite

"The threat of a strike in the anthracite fields of the United States has already brought about large imports of coal from the United Kingdom," says the Canadian Pacific Railway's weekly trade review. "In fact the imports of British anthracite for the present season already exceed the total purchases of these fuels by Canada for last year. The figure for the current season is 246,316 tons of Welsh and Scotch anthracite, as compared with a total of 219,327 tons last year. In addition there has also been received a small shipment of British coke."

Strike Order in Southwest Has Little Effect

In response to the strike call to all union miners in District 21, United Mine Workers (Oklahoma and Arkansas), employed in mines paying less than the 1924 wage scale issued by William Dalrymple, president of the district, four hundred of the nine hundred men employed in the Rock Island mines near Hartshorne, Okla., walked out Sept. 1. Late in the afternoon, however, the superintendent of the mine announced many had indicated their intention to resume work. None of the mines at Carbon, Colgate, McAlester, Wilburton, Red Oak, Lutie or eastern Oklahoma was affected. Isolated instances of a few men quitting work were reported, but the number was not sufficient to affect production. The same condition was reported from Greenwood, Denning, Russellville and Coal Hill, Ark., where all production is under the 1917 scale, and from Spadra and Paris, Ark., where half of the twelve mines are paying the 1917 scale, while the remainder are operating on a 1924 basis.

Conditions in Oklahoma have been such throughout the summer that a strike order now could be little more than a gesture. McAlester, Hartshorne and Wilburton began early to operate under a lower scale than that signed in Kansas City in May, 1924. There was union opposition and an occasional clash between the workers and union men opposed to accepting a lower wage, but they were infrequent, and production was more or less stable when, a couple of months ago, mines in Henryetta began to follow suit. This precipitated union activities. Mass meetings were held and Oklahoma National Guardsmen were sent into the district to preserve order. Under their restraining influence, picketing has since been conducted. It has been more or less peaceable, but effective to such a degree that most workers to be influenced by union opposition had quit work long before the formal strike order was issued.

Wide World Photo

They Are Counseling New England Against Anthracite

This is Gov. Fuller's conference of New England governors and their representatives called to suggest ways for the northeast states to meet a shortage of hard coal due to a strike. John Hays Hammond was made permanent chairman. They are, from left to right, seated: James J. Storrow, Gov. Fuller, Massachusetts; Gov. Brewster, Maine; Mr. Hammond; standing, left to right: John F. O'Connell, Boston Chamber of Commerce; Representative Henry L. Shattuck; Congressman Allen T. Treadway; Edward Coss representing Gov. Trumbull of Connecticut; Ernest D. Sprague, Rhode Island; John C. Sherbourne, representing Gov. Billings of Vermont; Mortimer Silverman, Massachusetts coal purchasing agent; James J. Phelan, former coal administrator; Senator Charles P. Howard of Reading, Mass.; Congressman Louis A. Frothingham, and Eugene C. Hultman, Massachusetts, commissioner of necessities of life.

Coal Mining Consumes Large Percentage of Timber

The coal mining industry consumed 87.3 per cent of the round timber and 58.5 per cent of the sawed timber used underground in 1923 by mining establishments in this country, according to data collected by the Department of Commerce in co-operation with the Departments of Agriculture and the Interior.

Bituminous coal mines consumed 63.6 per cent of the 174,389,004 cubic ft. of round timber and 44.8 per cent of the 507,359,000 board ft. of sawed timber which, according to the report, were used underground by 6,384 mining establishments in 1923. Anthracite mining was the second largest consumer with 23.7 per cent of the round and 13.7 per cent of the sawed timber. Pennsylvania, the leading state, reported 43.6 per cent of the round and 28.7 per cent of the sawed timber, as against 28.8 per cent of the round and 36.1 per cent of the sawed timber used in 1905, in which year 5,163, mines consumed 165,535,900 cubic ft. of round timber and 435,944,000 board ft. of sawed timber.

Summary statistics are presented in the accompanying tables. The figures for 1923 are preliminary and subject to such changes as may be found necessary upon further examination of the reports.

Table I—Quantity of Mine Timber Used Underground, by Classes of Mines: 1923 and 1905[1]

Class of mines	No. of Establishments[2]		Round Timber (Cubic Ft.)		Sawed Timber (Board Ft.)	
	1923	1905	1923	1905	1923	1905
Total	6,384	5,163	174,389,004	165,535,900	507,359,000	435,944,000
Bituminous	5,149	2,940	110,983,610	91,369,700	227,340,000	140,790,000
Anthracite	156	216	41,358,607	43,676,000	69,301,000	101,201,000
Iron	165	143	13,123,228	13,484,000	16,685,000	13,929,000
Other metal	879	1,718	8,780,092	15,282,500	193,333,000	164,956,000
Fire clay	35	.....	143,467	.....	700,000	.....
Miscellaneous	.....	146	.....	1,783,700	.....	15,059,000

Table II—Quantity of Mine Timber Used Underground, by States: 1923 and 1905[1]

State	No. of Establishments[2]		Round Timber (Cubic Ft.)		Sawed Timber (Board Ft.)	
	1923	1905	1923	1905	1923	1905
United States	6,384	5,163	174,389,004	165,535,900	507,359,000	435,944,000
Pennsylvania	1,923	754	76,008,347	47,506,500	145,528,000	157,324,000
West Virginia	965	325	17,430,303	6,716,000	49,519,000	19,642,000
Illinois	344	400	14,964,030	10,342,300	15,042,000	7,025,000
Montana	126	153	4,416,894	4,008,400	61,817,000	62,852,000
Arizona	115	139	1,085,844	1,045,500	61,858,000	40,498,000
Ohio	530	....[3]	6,045,014	....[3]	23,341,000	....[3]
Kentucky	410	....[3]	6,534,541	....[3]	20,989,000	....[3]
Michigan	81	60	6,550,501	12,602,600	10,108,000	11,487,000
Minnesota	57	....[3]	6,336,415	....[3]	10,256,000	....[3]
Colorado	227	487	5,404,933	4,340,900	6,743,000	13,518,000
All other states	1,606	2,845	29,612,182	78,873,700	102,155,000	123,595,000

[1] Statistics for 1905 compiled by the Forest Service, Department of Agriculture.
[2] Reported as number of mines for 1905 and number of mining establishments for 1923. An establishment in some cases comprises a group of mines.
[3] Included in "All other States."

Utah to Have New Coal Road In Carbon County

The Interstate Commerce Commission on Aug. 24 issued a certificate of public convenience and necessity authorizing the National Coal Railroad Co. to construct and operate eight and one-half miles of railroad in Carbon County, Utah. The line will serve the Union, Gordon Creek, Great Western and Consumers' Mutual coal companies. The road will be constructed with a stock issue, to be subscribed by the coal companies, and a bond issue of $150,000. It will connect with the Utah Railway Co.'s line, and it is understood that it will be later sold to that company at cost.

At first the program was more ambitious, but it was finally decided to construct the line mentioned only, for the present, anyway. From 7,000 to 10,000 acres of coal land will be grouped around the western end of the new line, which is at present without rail transportation facilities. It is estimated that the first section of road will in the first year handle 250,000 tons of coal, increasing to 750,000 tons by the end of the fifth year. The commission was told that the building of the road would lead to the opening of other coal mines. Present estimates are that the road will cost $437,400 to construct.

Eureka Mine Goes on Non-Union Basis Despite Threat to Close Jones' Plants In Western Pennsylvania and Ohio

Last week the Eureka mine of the Bertha Consumers Co. started to work open shop under the 1917 wage scale. Since the announcement made recently that the Bertha-Consumers Co. of Pittsburgh, Pa., had formally broken off negotiations with the United Mine Workers in northern West Virginia, union officials and John H. Jones, president of the company, have had almost weekly conferences in Pittsburgh over the situation.

To bridge over the trouble the union agreed to put miners at work in the Eureka mine, at Maidsville, near Morgantown, for several weeks. Upon the abrogation of working conditions with the union, the miners were called out of the pits. Strikers are alleged to have attacked non-union workers since the walkout. The Rachel mines of the company, at Downs, near Mannington, has been operating non-union for several months.

One phase of the controversy that will be watched will be in connection with the union's threat to tie up the Jones plants in more firmly entrenched union districts of western Pennsylvania and Ohio. Nothing has come of it thus far. In the past the Jones concern has been an ardent believer in the miner's union and, if reports are correct, the United Mine Workers lent the firm money from the District No. 5 treasury, in the Pittsburgh district. However, union officials refuse to herald this, saying that it was strictly a personal financial transaction and not a matter of public discussion.

Bittner Stages "Comeback"

As a "comeback" to the salutation extended to Van A. Bittner, chief international representative of the United Mine Workers in northern West Virginia, on a recent visit to Logan County, that official released for publication in Fairmont recently a letter addressed to J. P. Wright, spokesman of the Logan Chamber of Commerce. After charging that the chamber failed to give him an opportunity to reply to the statements made to him, Mr. Bittner says in part: "Your conduct in inviting representatives of our union to appear before your body and then insulting them as you did without giving anyone an opportunity to reply to your untruthful remarks, was the grossest exhibition of ignorance I have come across anywhere in the United States. However, as I say, I have no feeling against you or any other member of the Chamber of Commerce for your un-American actions because I realize that, living in an atmosphere of ignorance, suspicion and prejudice, as you do, under the domination of the king of bootleggers and thugs, you are simply a creature of environment."

After taking a series of personal slings at Mr. Wright and the commerce body, Mr. Bittner continues: "You can no more stop the organization of the miners of Logan County than you can stop the sun from shining or the rain from falling."

Former Judge Emmett M. Showalter, of Fairmont, general counsel of the Continental Coal Co. of Fairmont, which operates mines in the Scott's Run section of Monongalia County, appeared before the West Virginia Supreme Court in Charleston on Sept. 2 and asked that that tribunal act upon the writ of error granted to Bittner by one of the members of that body as soon as possible instead of waiting until the January term, because it arrived too late for the docket of the present term of court. In a mass meeting in Fairmont May 3, Bittner is alleged to have made attacks on Judge I. Grant Lazelle and his "infernal" injunctions, which were granted in Monongalia County, and personal attacks were made on Mr. Showalter, a former Fairmont banker. Bittner was fined $500 and sentenced to serve six months in the Monongalia County Jail, in Morgantown.

Dynamite Fairmore Mine

Depredations in northern West Virginia have not halted. The pitmouth of the Fairmore mine of the Fairmont & Baltimore Coal Co., along the M. R. branch of the B. & O. R.R. at Adamstown, Harrison County, was badly damaged Sept. 1, when several sticks of dynamite are supposed to have been thrown in. The force of the explosion was so terrific that one of the rollers used in the rope haulage system was blown three blocks away and rails were broken in twain. The company began to work non-union about a week before the damage occurred. Fifteen outside men had been employed at the mine. A. Lisle White, of Clarksburg, is general manager of the mine.

While figures indicate that the union has the worst of the "go," the interest in the United Mine Workers continues. One of the largest miners' mass meetings ever held in the Fairmont region took place in a field near Monongah Aug. 30, when from 10,000 to 18,000 people were present to hear Bittner and others speak and at an ox roast held at Enterprise Sept. 1 there were 5,000 people present and three steers were slaughtered to feed the multitude.

Miners Celebrate Labor Day

The United Mine Workers celebrated Labor Day with several large meetings. One was held at Watson and another at Pitcairn, near Clarksburg. John L. Lewis, international president, did not attend the Labor Day meeting in Fairmont, but may come for a Sunday gathering at a later date. The Knights of the Ku Klux Klan entertained the imperial wizard Labor Day and probably Mr. Lewis wanted no counter attraction. Some observers profess to see a connection between the Klan and the so-called American plan, which is opposed to employing foreigners and negroes in the mines.

Bryan Prepares to "Put Coal Business in Shape"

Talk of a coal strike "is the usual show to raise the price of coal," said Charles W. Bryan, former Governor of Nebraska, in Kansas City, Aug. 30, as he rested before continuing his Chautauqua lecture tour. "I know there are fifty million cars of coal above ground now and there is no shortage. The mines are closing down because there is too much production. The operators are aided by the miners and they call the show a strike. The operators now say, 'We cannot mine coal.' After the coal is sold at a high price and the 'strike' is ended, they will say, 'We cannot supply the demand,' and raise the price."

Mr. Bryan reiterated his statement made in southern Kansas a few weeks ago that he will sell coal in Nebraska again this winter at a reduced price. "I will continue to sell coal at a low rate, as I promised the people," he said. "Excessive profits are cut out, and coal prices in Nebraska are forced low to meet my price. I started the coal business when Governor and promised when I left I would continue to help the people, just as their government should, but doesn't."

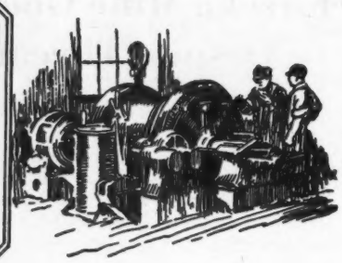
"After putting the coal business in shape," Mr. Bryan said, "Mrs. Bryan and I are going to Florida."

Local labor leaders have encountered the strictest injunction so far issued in the one handed down by Judge Warren B. Kittle of the Taylor-Barbour Circuit Court. By it union members are restrained from making any unlawful threats or suggestions of danger, are forbidden to gather in crowds, groups, single file or any other formation to intimidate employees or prospective employees of the Maryland Coal Co. of West Virginia, are prohibited from marching or staging demonstrations, useing vile, insulting language and especially the word, 'scab', and are restrained from circulating propaganda tending to intimidate employees of the plaintiff.

In the first four days of last week the non-union mines of northern West Virginia produced 5,847 cars of coal, a decrease of 581 cars from the corresponding period of the previous week. Union mines loaded 1,067 cars of coal, a decrease of 57 cars. Some of the non-union mines experienced labor trouble again last week, although it reached no alarming proportions.

Strike conditions are quiet in the Panhandle section. President Lee Hall of the Ohio miners had a conference at Wheeling on Sept. 2, with Andrew R. Watkins, international executive board member of Ohio, and a member of the international organization committee. Mr. Hall issued a statement to the effect that the union mines were working steadier in Ohio and that further improvement in working conditions was expected soon.

Practical Pointers For Electrical And Mechanical Men



Drying Sand by Electricity at Mines Cuts Outside Labor Cost

Heating by electricity as compared to heating by steam or heating directly from a stove or furnace is usually so much more expensive that it is entirely impractical. It is only in special cases that it pays to heat by electricity. An unusual application of electric heating is that of drying sand for mine locomotives. A number of the mines of the West Kentucky Coal Co. are equipped with dryers of this type.

Fig. 1 shows an end view of the dryer which is used at the No. 9 mine of the St. Bernard group at Earlington, Ky. Details of the inside of a similar dryer are shown in Fig. 2. The sand box, which is lined with sheet metal, has the following inside dimensions: Length, 6 ft. 6 in.; depth, 36 in.; width at top, 27 in.; width at bottom, 18 in. The resistance tubes or heating units are arranged in three horizontal rows located close to the bottom of the box. An extra-heavy galvanized screen of ⅛-in. mesh forms the bottom. The sand, when damp, will not pass through this screen by virtue of its own weight, but runs through readily when dried.

To provide for easy cleaning, the screen is mounted in a frame which is hinged at one side. When this screen becomes clogged with foreign matter, the dryer is allowed to empty. Then the screen frame is loosened at one side and dropped to a vertical position. The foreign matter falls down or is easily brushed off with a stiff broom.

The wire of the heating units is in direct contact with the sand. These units consist of grade "BB" size No. 12 B.w.g. galvanized telephone wire wrapped on ¾-in. porcelain tubes which in turn are mounted on ⅜-in. steel rods. Each unit extends the length of the box. For single-phase, 220-volt alternating current, twenty units are used, these arranged in two parallel circuits of ten in series. At 2-ft. intervals the units are supported by large porcelain knobs mounted on cross rods.

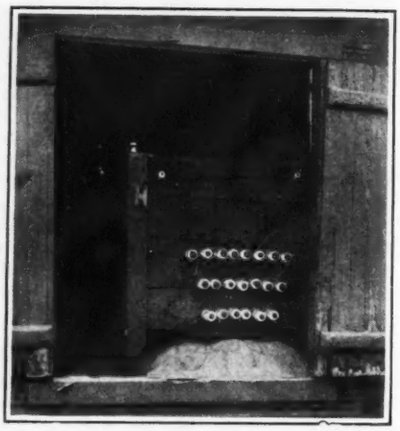


Fig. 1—Drying Sand at No. 9 Mine

The West Kentucky Coal Co. is using electric sand dryers at several of its mines. The power cost to operate one dryer is approximately 13c. per hour.

No data was available concerning the energy required by those sand dryers, but it was noted that standard 30-amp. fuses are used on a 220-volt single-phase supply circuit. Assuming that these fuses are carrying full load, the dryer requires 6.6 kw., which, at 2c. per kw-hr., makes the energy cost about 13c. per hour. The West Kentucky company uses the electric dryers where steam is not available. The advantages of the electric over the stove type of dryer is that much less attention is necessary, and there is a decreased fire hazard. After the electric dryer has been filled with sand it requires no more attention until the next filling. In some instances this saving in labor means the elimination of a special man.

This electric dryer was designed by N. W. Umstead, superintendent of equipment of the St. Bernard division. The several dryers in use were made in the shop at No. 9 mine at Earlington.

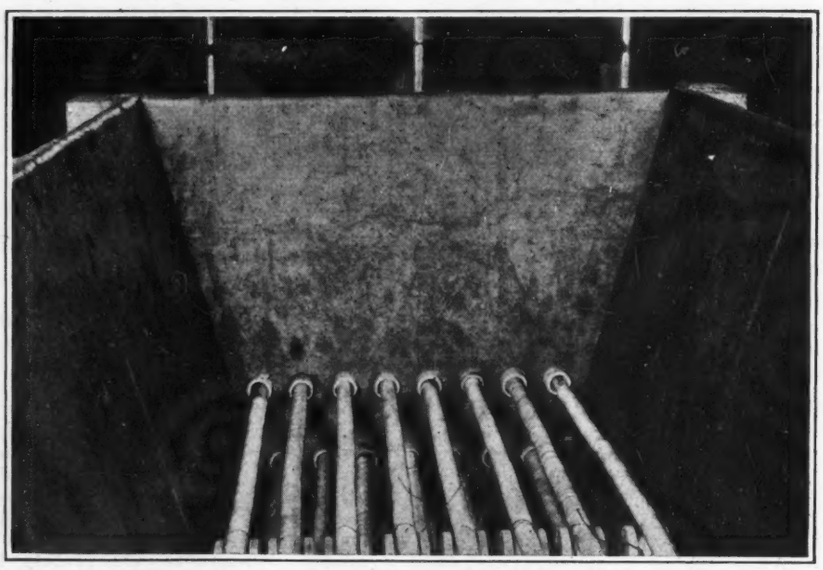


Fig. 2—Showing the Inside Construction

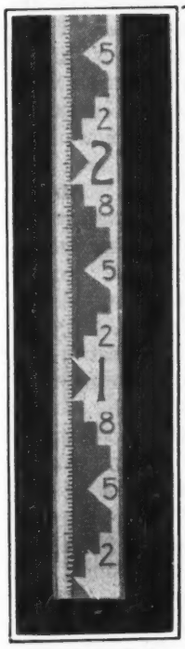
Sheet metal is used as a lining for the box. Note the tube cross-supports at the bottom of the illustration. The sand comes in direct contact with the resistance wire of the twenty heating units. The wire is wound on porcelain tubes which are mounted on ⅜-in. x 7-ft. steel rods.

Combined Level and Stadia Rod Can Be Read Easily

A new type of combined level and stadia rod or rather a new marking for such a rod intended to afford

great ease in reading has been devised by Otis Bledsoe, chief engineer of the Sunlight Coal Co., of Boonville, Ind. A portion of a rod bearing this new marking is shown in the accompanying illustration. Patent on this marking has been applied for by Mr. Bledsoe.

As may be seen, the marking of this rod is unusually large and legible. In actual practice this rod has been read with an ordinary transit at a distance of approximately 1,100 ft., this reading being accurate to "half a tenth." Naturally the 1/100 ft. markings were so small as to be indistinct and confusing at this extreme distance.



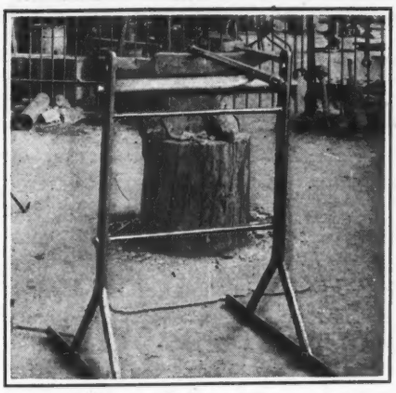
Easily Legible Markings

In this system of marking a black point facing the right indicates a foot; a white point facing the left indicates a half foot. The balance of the markings on this rod are so simple as to require little or no explanation. Their nature and clearness are such that they can be read at far greater distance than can any ordinary rod.

Convenient "Old Woman" Is Effective Helper

Much of the work performed in both the mine blacksmith and machine shop, can be facilitated by the use of a suitable "old woman" to hold up the end of the work opposite that upon which actual operations are being performed. The accompanying illustration shows a device of this kind employed in the No. 4 shop of the Kingston Coal Co., Kingston, Pa. This was built up by the blacksmith and excellently answers the purpose for which it was designed.

It consists essentially of two standards fastened together by distance bolts or rods with a gudgeoned roller extending between them. This roller is made adjustable in height, its upper edge in the picture shown being at approximately the same elevation above the floor as the face of the anvil. Removal of two of the outer nuts on the distance rods will release one of the standards so that the elevation of the roller may be changed.



This "Old Woman" Never Scolds

In many operations a suitable support for the dead end of the work is as convenient and effective as a helper. This stand or "old woman" is simply and easily constructed and may be adjusted readily as to height. Those who have built and used it consider it almost indispensable to their daily work.

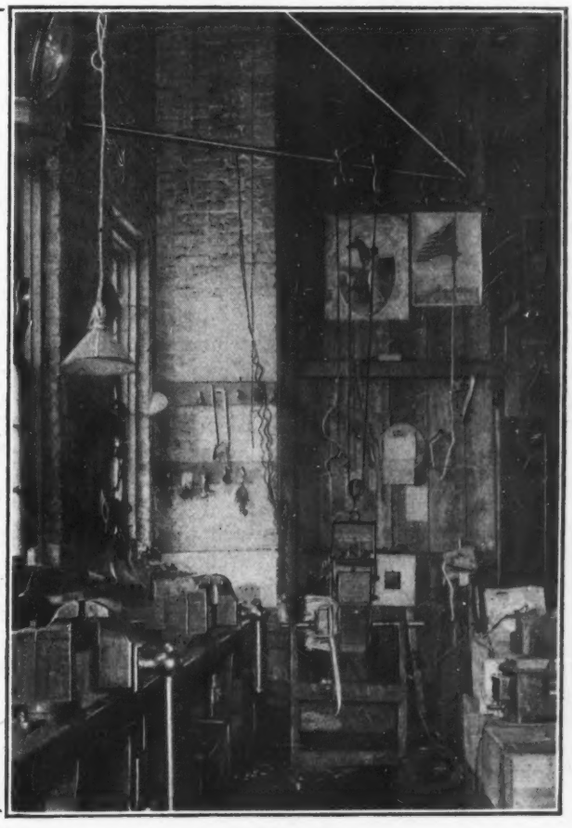
The standard pieces are split for a certain distance from their lower ends and the two halves spread apart and fastened to horizontal foot pieces, which may be either straps or angles. In this case they are straps. The roller on this "old woman" is about 2¼ in. in diameter and made from a solid rod of metal, the two ends being turned down to form the gudgeons. It would be practical, however, to make this roller of a piece of pipe of suitable size with the ends plugged and the gudgeons driven into or attached to the plugs.

A device of this kind, as may be seen, is extremely simple to construct, yet it readily facilitates many of the operations that must be daily performed in the blacksmith shop of the mine.

Swinging Jib Frame Aids in Motor Repairs

In the electric repair shop of the Consolidation Coal Co. at Frostburg, Md., the poles for testing armature windings are supported from a swinging jib frame of iron pipes. The apparatus is suspended from a wheel carriage which can be moved to any point on the horizontal member of the jib. By means of a simple pulley arrangement and a counterbalance the apparatus can be adjusted to the height of the armature to be tested. The carriage wheels and pulleys are old trolley wheels. The merit of this scheme is that the apparatus can be moved to any point within the radius of the swinging jib and can be raised or lowered without much effort on the part of the repairman; also it can be swung out of the way when there is no work requiring its use.

This swinging jib frame supports poles for testing armature windings. The apparatus swung from the pipes is suspended by a wheel carriage and counter weights. The jib can be adjusted to the height of the armature to be tested, thus facilitating repairs.



Book Reviews

Triumphs in Engineering

In interesting fashion with valuably reminiscent illustrations and charts of progress, Conrad Newton Lauer, general manager of Day & Zimmerman, engineers, has summed up 120 years of progress in industry in which story there is a little enough about coal or, indeed, other mining.

This publication entitled "Engineering in American Industry" is a republication of an address delivered on Dec. 12, 1923, before Princeton University under the Cyrus Fogg Brackett Lectureship in Applied Engineering Technology. It contains some 96 pp. measuring 9½x12 in., is printed on a fine grade of paper of *de luxe* character and bound in buckram.

It records what engineering has done to bring prosperity and comfort to the United States and does it in a way that makes it easy for reference. Among other charts are some showing the geographical distribution of industry in the United States by decades from 1849 to 1899 and thereafter by five-year periods, with dates of the principal developments, also maps showing centers of manufacture and of farm production. The book is published by the McGraw-Hill Book Co., 370 Seventh Ave., New York City, the price being $2.50. It has 61 charts and many illustrations.

Facts Found by the Coal Commission

The average citizen, if he recalls at all the brief existence of the late and unlamented United States Coal Commission, remembers it as the body that spent $600,000 of the government's money without reducing his fuel bill. Not a few men who should know better give the currency of repetition to this flippancy. Disappointed because the Commission did not usher in a trade millenium which would guarantee fat profits and eliminate all worry as to the future, they ignore the cold truth of John Hays Hammond's declaration that "there is no easy panacea for this troubled industry." And many others who have been most glib in quoting the Commission as the authority for this statement and that speak, it is suspected, more from hearsay than from any intimate acquaintance with the reports of the federal fact-finding agency appointed by President Harding.

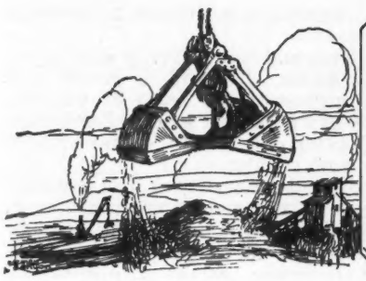
Possibly some of the blame for this state of mind should attach to the Commission, although circumstance was the major offender. The limited circulation necessarily given the mimeographed copies of the reports of the Commission cut down its audience. The highly technical, and sometimes confusing and heavy, character of the reports themselves frightened away many readers. Working against a far too early deadline, the federal fact-finding agency poured out a stream of inchoate facts which the public was in no condition to properly digest. What the Commission has needed has been a Boswell who would make its labors palatable to popular taste and time.

Such an attempt has been made in a volume just published (*What the Coal Commission Found*; The Williams & Wilkins Co., Baltimore, Md.; 416 pp. $5). Considering that it is the work of sixteen former members of the Commission staff, the fact that unevenness in style and in context is not more in evidence pays high tribute to Edward E. Hunt, F. G. Tryon and Joseph H. Willits, who acted both as editors and contributors. If some of the conclusions seem unacceptable, the answer is that whatever vice resides in those recommendations comes from the work of the Commission itself. That cannot be too strongly emphasized if the reader is to have a clear conception of the scope of the volume. The main purpose of the work is not the enunciation of any new theories, but to make available to the general reader those facts and conclusions which received the seal of the Commission's approval. Whatever quarrel there be must be with the Hammond commission, not with the scribes who wrote this book.

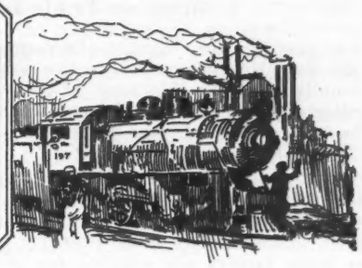
There is, naturally, practically no effort made to evaluate anew the work of the federal fact-finding agency. The direction is all in condensation, selection and digestion of the data put out by the Commission. In some respects, the results achieved represent a notable improvement over the original reports. This is particularly true of Anne Bezanson's studies of wage earnings, which discards many of the confusing and misleading tables incorporated in the Commission's report. The analysis of wage rate structures undertaken by W. E. Fisher will well repay reading in full: his summarizations in the volume under review form an intriguing and informative introduction to that work. Possibly the least readable portions of the book are the costs studies of David E. Wing; the mass of figures dealt with and the necessity for condensation were twin barriers over which the author stumbled on his way to claim the reader's attention.

The *Coal Age* family is so familiar with the reports on underground management, that a passing reference to Sanford Thompson's abstract of his work on that subject is all that is necessary. So, too, with the studies on wastes and better coordination between mining and transportation initiated by C. E. Lesher. More restraint is shown by J. W. Adams as he again wallows gleefully in the iniquities of the jobbers, and he confesses that "the total tonnage affected" by the activities he condemns was small and the practices assailed typical of the "coal bootlegger" rather than the legitimate jobber. There is real meat—not always tasty—in the sections of living conditions and the cost of living in the mining communities written by Bertha M. Neinburg and Marie L. Obenauer. Other features of the Commission's work are covered by H. Foster Bain, James E. Black, Horace B. Drury and Raymond A. Walter. The task of orienting the reader into the spirit of the book falls to Mr. Tryon and Sydney A. Hale.

The format is one of which the publisher may well be proud, and there are few typographical errors. It is all the more regrettable, therefore, that many of the charts in the book are crowded into such small space they are difficult to decipher. This is particularly unfortunate in a work intended for the lay reader who must receive his instruction with the irreducible minimum of personal exertion and inconvenience.



Production And the Market



Hard-Coal Strike Finds Country Well Prepared; Bituminous Market Stronger

Though the hard-coal "suspension" is in its second week both sides give every indication of maintaining their present positions indefinitely. Speculation now inclines more to the belief that there will be a protracted period of idleness than was the case at first. In order that an acute shortage may be deferred as long as possible, however, some companies—notably the D. L. & W.—have adopted regulations calculated to spread out the available supply as evenly as practicable, preference being given where necessary to the maintenance of health and comfort.

That the producers did a good job up to the last minute is indicated by an output during the week preceding the strike that exceeded that of the previous week, which was the largest since December, 1922. All in all, the country is unusually well prepared for a strike, as stocks in the hands of consumers are of goodly size and retailers' supplies are heavy.

Prices, too, are keeping within reasonable bounds, considering conditions. Company quotations are but little changed, 10c. having been added in a few instances to the quotations on egg, stove and chestnut, and 50c. on pea. Though independent schedules are considerably higher, some of these producers are out of the market, having been booked for their entire output in advance of the suspension.

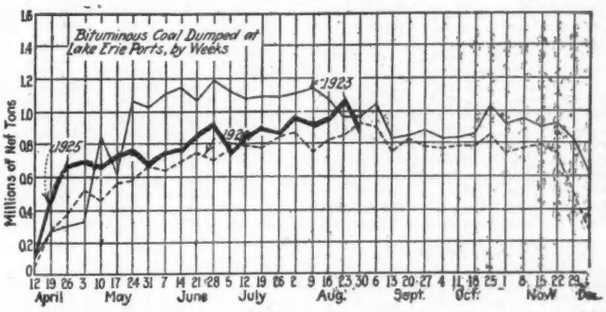
Soft-Coal Market Maintains Strength

Despite an output exceeding consumption by more than 2,000,000 tons, the bituminous coal market continues to display marked strength. Steady accumulation of reserves by consumers, stimulated by the hard-coal suspension, has absorbed the tonnage unusually well, but how long this will continue will depend to a large extent on the duration of the halt in anthracite production.

Smokeless is easily the market feature, aided by the fear in some quarters that the rate cut by rail to New England on prepared sizes will divert considerable tonnage from other accustomed channels. Practically all grades are strong, however, and prices notably firm.

Output Still Climbing

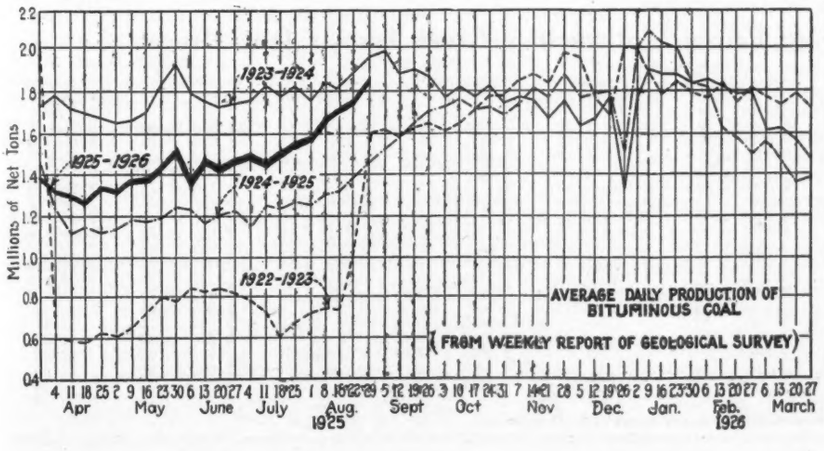
Output of bituminous coal in the week ended Aug. 29 is estimated by the Geological Survey at 11,218,000 net tons, compared with 10,523,000 tons in the preceding week, as shown by revised figures. Anthracite output in the week ended Aug. 29 totaled 2,319,000



net tons, as against 2,209,000 tons produced in the previous week.

Coal Age Index of spot prices of bituminous coal made a further advance last week, standing on Sept. 5 5 at 183, the corresponding price being $2.22.

Hampton Roads dumpings of coal at all piers during the week ended Sept. 3 totaled 421,390 net tons, compared with 411,814 tons in the previous week.



Estimates of Production

(Net Tons)

	1924	1925
BITUMINOUS		
Aug. 15 (*a*)	8,167,000	10,261,000
Aug. 22 (*a*)	8,582,000	10,523,000
Aug. 29 (*b*)	9,006,000	11,218,000
Daily average	1,501,000	1,870,000
Cal. yr. to date	(*c*) 300,370,000	317,509,000
Daily av. to dte	1,473,000	1,555,000
ANTHRACITE		
Aug. 15	1,386,000	1,904,000
Aug. 22	1,711,000	2,209,000
Aug. 29	1,837,000	2,319,000
Cal. yr. to date	(*c*) 60,307,000	62,417,000
COKE		
Aug. 22 (*a*)	108,000	144,000
Aug. 29 (*b*)	110,000	165,000
Cal. yr. to date	(*c*) 6,904,000	6,409,000

(*a*) Revised since last report. (*b*) Subject to revision. (*c*) Minues two days' production to equalize number of days in the two years.

Midwest Trade Is Brisk

In the Midwest market the demand for Illinois, Indiana and west Kentucky coals in the past week has been exceptionally good for this time of the year. There has been a general tendency again toward higher prices, especially on the best grades of west Kentucky coal.

Though the operators had quite a few cars of unbilled coal at the mines two weeks ago, this has been disposed of and they are now working on orders, which are coming in plentifully every day. Demand for prepared coal continues good, but operators have difficulty in disposing of fine coal, as large buyers are playing for prices to go lower. Fine coal is still at a low figure in the Illinois field, central Illinois bringing $1.30, and Franklin County screenings as low as $1.40. The prices on Indiana screenings have improved somewhat, Fourth Vein Indiana bringing $1.60@$1.70 and Fifth Vein Indiana $1.25@$1.40.

The market on Eastern coal continues to be very good. Prices have taken another jump of 25c. to 50c. on high grade eastern Kentucky and West Virginia coal and many jobbers have difficulty in covering orders taken on a speculative basis. The big-line yards in Iowa, who control about 70 to 80 per cent of all the retail coal yards in that state, are expected to place orders for five hundred to a thousand cars of eastern Kentucky coal for September and October shipment. Even the cheaper grades of West Virginia coal are bringing a premium, and at that it is difficult to obtain a large tonnage of this coal.

The situation in Pocahontas and New River is serious on account of the anthracite strike. Unheard of prices have already been quoted, the highest so far being $5 per ton, and dealers are willing to pay even that price. Large consumers are holding back, taking only what they have placed for shipment in the early part of August.

In the Carterville as well as the Harrisburg field domestic business has started in with a rush and all mines are oversold on lump and a few on egg. Nut is not moving well and the small sizes as well as screenings are in the way. This is the condition at the shaft mines. At the strip mines all sizes are moving fairly well with the exception of steam, and the prices of these sizes are so low that they move anyway, but in a general way the demand for steam is unusually good everything considered. Railroad tonnage is fair and car supply is good, with working time from four to five and six days a week. Mines that have been idle for many months are resuming and miners are slowly going back.

In the Duquoin field conditions are much better. Four and five days a week working time prevailed last week although steam and the smaller sizes are hard to move. Domestic is sold up for a couple of weeks ahead on lump with egg and nut about even. Prices are in line with the independent prices of Williamson County while strip prices

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Sept. 8 1924	Aug. 24 1925	Aug. 31 1925	Sept. 5 1925†
Smokeless lump	Columbus	$3.60	$3.85	$4.00	**$4.50@$4.75**
Smokeless mine run	Columbus	2.00	2.10	2.15	**2.40@ 2.60**
Smokeless screenings	Columbus	1.20	1.50	1.50	**1.40@ 1.65**
Smokeless lump	Chicago	3.60	3.85	4.25	**4.50@ 5.00**
Smokeless mine run	Chicago	1.85	2.25	2.60	2.50@ 2.75
Smokeless lump	Cincinnati	3.75	3.75	3.85	**5.00**
Smokeless mine run	Cincinnati	1.85	2.50	2.35	**2.50**
Smokeless screenings	Cincinnati	1.35	1.55	1.60	**2.00**
*Smokeless mine run	Boston	4.10	4.65	4.90	**5.25@ 5.50**
Clearfield mine run	Boston	1.90	1.75	1.70	**1.75@ 2.10**
Cambria mine run	Boston	2.25	1.95	2.00	**1.90@ 2.35**
Somerset mine run	Boston	2.05	1.85	1.85	**1.85@ 2.20**
Pool 1 (Navy Standard)	New York	2.75	2.55	2.55	**2.75@ 3.00**
Pool 1 (Navy Standard)	Philadelphia	2.40	2.60	2.60	2.45@ 2.80
Pool 1 (Navy Standard)	Baltimore	2.60	1.95	2.05	**2.25@ 2.35**
Pool 9 (Super. Low Vol.)	New York	2.10	2.00	2.00	**2.10@ 2.25**
Pool 9 (Super. Low Vol.)	Philadelphia	2.15	2.00	2.05	1.90@ 2.20
Pool 9 (Super. Low Vol.)	Baltimore	1.85	1.75	1.90	**2.00@ 2.15**
Pool 10 (H.Gr.Low Vol.)	New York	1.80	1.80	1.80	**1.90@ 2.15**
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.75	1.70	1.85	1.70@ 2.00
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.60	1.65	1.75	**1.85@ 1.95**
Pool 11 (Low Vol.)	New York	1.60	1.60	1.60	**1.75@ 1.90**
Pool 11 (Low Vol.)	Philadelphia	1.45	1.55	1.65	1.55@ 1.75
Pool 11 (Low Vol.)	Baltimore	1.45	1.45	1.55	**1.70@ 1.75**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.50	1.55	1.55	1.50@ 1.60
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.50	1.60	1.50@ 1.70
Pool 54-64 (Gas and St.)	Baltimore	1.35	1.40	1.50	**1.65@ 1.70**
Pittsburgh se'd gas	Pittsburgh	2.40	2.50	2.50	2.50
Pittsburgh gas mine run	Pittsburgh	2.10	2.15	2.15	2.10@ 2.25
Pittsburgh mine run (St.)	Pittsburgh	1.85	1.95	1.95	1.90@ 2.00
Pittsburgh slack (Gas)	Pittsburgh	1.35	1.55	1.55	1.50@ 1.60
Kanawha lump	Columbus	2.10	2.45	2.55	**2.45@ 2.75**
Kanawha mine run	Columbus	1.40	1.60	1.65	1.55@ 1.80
Kanawha screenings	Columbus	1.10	1.30	1.30	1.25@ 1.35
W. Va. lump	Cincinnati	2.35	2.35	2.35	**2.50@ 3.50**
W. Va. gas mine run	Cincinnati	1.50	1.60	1.60	1.50@ 1.75
W. Va. steam mine run	Cincinnati	1.35	1.50	1.40	**1.35@ 1.60**
W. Va. screenings	Cincinnati	.90	1.20	1.15	**1.15@ 1.35**
Hocking lump	Columbus	2.40	2.60	2.75	**2.65@ 2.90**
Hocking mine run	Columbus	1.55	1.65	1.65	1.50@ 1.80
Hocking screenings	Columbus	1.15	1.45	1.40	1.35@ 1.50
Pitts. No. 8 lump	Cleveland	2.35	2.25	2.50	2.00@ 3.00
Pitts. No. 8 mine run	Cleveland	1.85	1.85	1.90	1.90@ 1.95
Pitts. No. 8 screenings	Cleveland	1.20	1.40	1.55	1.50@ 1.60

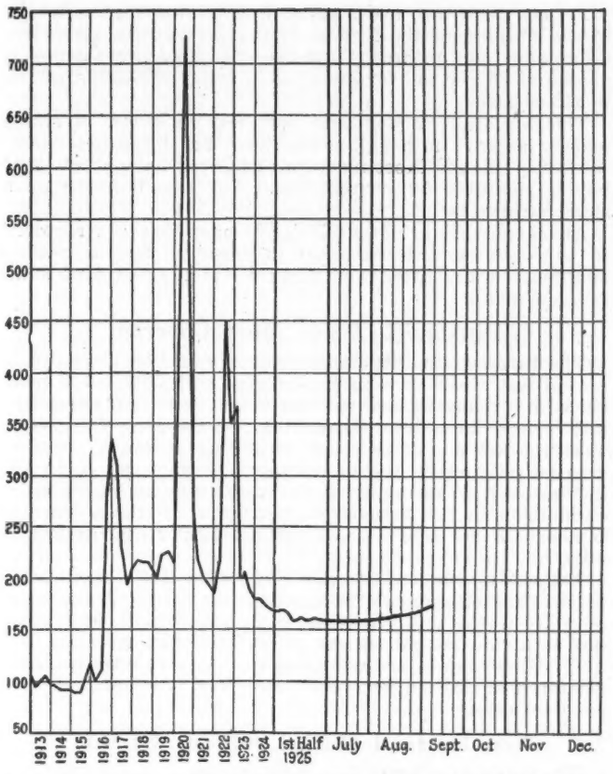
Midwest	Market Quoted	Sept. 8 1924	Aug. 24 1925	Aug. 31 1925	Sept. 5 1925†
Franklin, Ill. lump	Chicago	$3.10	$3.10	$3.10	**$3.25**
Franklin, Ill. mine run	Chicago	2.35	2.35	2.35	2.25@ 2.50
Franklin, Ill. screenings	Chicago	1.65	1.95	1.95	*1.60@ 1.75*
Central Ill. lump	Chicago	2.60	2.60	2.85	2.75@ 3.00
Central Ill. mine run	Chicago	2.20	2.10	2.10	2.00@ 2.25
Central Ill. screenings	Chicago	1.55	1.55	1.55	1.35@ 1.75
Ind. 4th Vein lump	Chicago	2.85	2.85	2.85	**3.00@ 3.25**
Ind. 4th Vein mine run	Chicago	2.35	2.35	2.35	2.25@ 2.50
Ind. 4th Vein screenings	Chicago	1.65	1.60	1.60	1.50@ 1.75
Ind. 5th Vein lump	Chicago	2.50	2.35	2.35	2.25@ 2.50
Ind. 5th Vein mine run	Chicago	2.10	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings	Chicago	1.50	1.45	1.20	1.15@ 1.30
Mt. Olive lump	St. Louis	2.85	2.50	2.50	2.50
Mt. Olive mine run	St. Louis	2.50	2.00	2.00	2.00
Mt. Olive screenings	St. Louis	1.75	1.75	1.75	1.75
Standard lump	St. Louis	2.15	2.25	2.25	2.25
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.90
Standard screenings	St. Louis	1.20	1.30	1.30	1.25@ 1.40
West Ky. block	Louisville	2.45	1.85	2.10	2.00@ 2.25
West Ky. mine run	Louisville	1.60	1.30	1.35	1.25@ 1.50
West Ky. screenings	Louisville	1.30	.75	.75	.65@ .85
West Ky. block	Chicago	2.35	2.25	2.05	**2.25@ 2.40**
West Ky. mine run	Chicago	1.60	1.20	1.25	1.15@ 1.35
South and Southwest					
Big Seam lump	Birmingham	3.10	2.00	2.20	**2.00@ 2.50**
Big Seam mine run	Birmingham	1.75	1.75	1.75	1.50@ 2.00
Big Seam (washed)	Birmingham	2.00	1.85	1.85	1.75@ 2.00
S. E. Ky. block	Chicago	2.50	2.80	2.80	**2.75@ 3.25**
S. E. Ky. mine run	Chicago	1.60	1.95	1.95	1.85@ 2.10
S. E. Ky. block	Louisville	2.50	3.00	2.85	**2.75@ 3.25**
S. E. Ky. mine run	Louisville	1.50	1.60	1.60	1.50@ 1.75
S. E. Ky. screenings	Louisville	1.00	1.15	1.15	**1.10@ 1.40**
S. E. Ky. block	Cincinnati	2.50	2.70	2.55	**2.75@ 3.25**
S. E. Ky. mine run	Cincinnati	1.45	1.60	1.55	**1.40@ 1.85**
S. E. Ky. screenings	Cincinnati	1.00	1.15	1.15	**1.10@ 1.35**
Kansas lump	Kansas City	4.50	4.35	4.35	4.25@ 4.50
Kansas mine run	Kansas City	3.50	3.10	3.10	3.00@ 3.25
Kansas screenings	Kansas City	2.50	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in heavy type; declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Sept. 8, 1924 Independent	Sept. 8, 1924 Company	Aug. 31, 1925 Independent	Aug. 31, 1925 Company	Sept. 5, 1925† Independent	Sept. 5, 1925† Company
Broken	New York	$2.34		$8.00@$9.25		$8.20@$8.50		**$8.20@$8.95**
Broken	Philadelphia	2.39		9.15		8.25@ 8.90		8.25@ 8.90
Egg	New York	2.34	$8.50@$9.40	8.75@ 9.25	$10.00@$11.00	8.65@ 8.90	**$13.00@14.00**	8.65@ 8.90
Egg	Philadelphia	2.39	9.00@ 9.70	8.80@ 9.25	8.90@ 9.70	8.70@ 8.85	8.90@ 9.70	**8.70@ 8.95**
Egg	Chicago*	5.06	8.17@ 8.27	8.14@ 8.20	8.17@ 8.60	8.03@ 8.28	8.17@ 8.60	8.03@ 8.28
Stove	New York	2.34	9.25@10.00	8.75@ 9.50	10.00@11.25	9.15@ 9.40	**13.00@14.00**	9.15@ 9.40
Stove	Philadelphia	2.39	9.35@10.00	9.15@ 9.50	9.15@10.75	9.15@ 9.30	9.15@10.75	**9.15@ 9.35**
Stove	Chicago*	5.06	8.63@ 8.75	8.50@ 8.64	10.00@11.00	8.48@ 8.80	10.00@11.00	8.48@ 8.80
Chestnut	New York	2.34	8.75@ 9.45	8.75@ 9.25	10.00@10.75	8.65@ 8.90	**13.00@14.00**	**8.65@ 8.95**
Chestnut	Philadelphia	2.39	8.85@ 9.80	9.15@ 9.25	9.15@10.15	8.85@ 8.90	9.15@10.15	**8.85@ 8.95**
Chestnut	Chicago*	5.06	8.26@ 8.40	8.44@ 8.60	10.00@11.00	8.28@ 8.50	10.00@11.00	8.28@ 8.50
Pea	New York	2.22	5.00@ 5.25	5.50@ 6.00	5.75@ 6.25	5.00@ 5.55	**6.00@ 7.00**	**5.00@ 6.00**
Pea	Philadelphia	2.14	5.75@ 6.25	5.75@ 6.00	5.50@ 5.90	5.00@ 5.50	5.50@ 5.90	**5.00@ 6.00**
Pea	Chicago*	4.79	5.13@ 5.45	5.36@ 6.20	5.25@ 5.75	5.05@ 5.36	5.25@ 5.75	5.05@ 5.36
Buckwheat No. 1	New York	2.22	2.25@ 2.70	3.00@ 3.15	2.30@ 2.75	2.50	**2.60@ 3.00**	2.50
Buckwheat No 1	Philadelphia	2.14	2.50@ 3.00	3.00	2.50@ 2.75	2.50	2.50@ 2.75	2.50
Rice	New York	2.22	1.75@ 2.00	2.00@ 2.25	2.00@ 2.25	2.00	**2.25@ 2.50**	2.00
Rice	Philadelphia	2.14	2.00@ 2.25	2.25	2.00@ 2.25	2.00	2.00@ 2.25	2.00
Barley	New York	2.22	1.25@ 1.50	1.50	1.60@ 1.80	1.50@ 1.60	**1.80@ 2.00**	*1.60*
Barley	Philadelphia	2.14	1.50	1.50	1.50@ 1.75	1.50	1.50@ 1.75	1.50
Birdseye	New York	2.22		1.60			1.80@ 2.00	1.60

* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type; declines in *italics*.



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1925			1924
	Sept. 7	Aug. 31	Aug. 24	Sept. 8
Index	183	174	172	166
Weighted average price	$2.21	$2.10	$2.08	$2.01

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and, second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke; 1913-1918," published by the Geological Survey and the War Industries Board.

range anywhere from independent prices down for as much as a dollar.

In the Mt. Olive field there has been no increase in price and domestic is in good demand for lump and egg and steam is about equal to the demand. Railroad tonnage is fair. In the Standard field there has been an increase in movement but prices are low and just about cost of production is realized. A few mines are starting up over the field and working time is from three to five days a week.

Movement of domestic coal at St. Louis continues good and a drift is beginning from high grade to middle grade on account of the high prices. Duquoin and Mt. Olive coals are rapidly coming into favor. Standard is still slow excepting on apartment and similar contracts. The poorer elements have made no effort to place their coal orders and this will cause a fairly good demand when cold weather comes for cheaper coal. Anthracite is slow. The strike has caused no uneasiness here. The storage supply is ample to take care of requirements for the winter. Smokeless is not in demand and coke is moving slowly.

Improvement Steady in Kentucky

Steady improvement in production is reported in Kentucky with more mines in operation and on better operating schedules. The eastern Kentucky fields are quite busy and western Kentucky is gradually increasing, with a few mines showing full time operations. A large number are running half to three quarters time, the average for the field on latest reports showing 47 per cent of potential time.

About the only price changes reported over the week were in eastern Kentucky, where it is said the cheapest of block coal is bringing $2.75, while some of the specialty coal producers are asking as high as $3.50, but $3.25 appears to be the sales top. Eastern Kentucky screenings also are higher, so-called "cat and dog stuff" going as low as $1.10, but good screenings are reported to be selling at $1.25@$1.40. Western Kentucky showed no change, still having plenty of room for more business.

Demand is strong for all grades, prepared moving well to retailers, while industrial concerns are taking some prepared, some mine-run, and keeping the market well cleaned up on screenings, especially screenings from gas coal. The Kentucky trade is feeling better over the general situation than at any previous time in many months, as conditions are pointing to good volume and good values.

Northwest Business Improves Slowly

A spurt in anthracite was the outstanding feature at Duluth last week, but other coals, apart from Pocahontas, have not picked up to any extent. In spite of the wide spread between anthracite and bituminous prices, retailers report sales of hard coal so far this season larger than up to the same time last year. If the strike ends before the close of navigation it is thought that this market can easily absorb around 1,100,000 tons of anthracite during the present coal year.

Apprehension is felt lest there be insufficient supplies of Pocahontas in this market this season, due to the hard-coal strike and lower freight rates. The almost universal call for prepared sizes is embarrassing dealers and it is likely that domestic consumers will find it necessary to accept more mine-run. There has been difficulty in disposing of smokeless screenings, but demand is being created for them to mix with other screenings to heat public and commercial buildings owing to the campaign being inaugurated against the smoke nuisance.

While industrial demand for bituminous coal is still light, some improvement is being shown and orders are expected to reach a good aggregate this month. More utilities and municipal boards in northern Minnesota are expected to put out specifications in the near future for large tonnages of steam coal. Demand for steam coal from iron mining companies on the Minnesota ranges is limited and no substantial new bookings from the independent iron mining companies are looked for this fall.

With an advance of 10c. on Sept. 1, anthracite quotations are back to a winter basis. Prices now are: Egg, $13.10; stove, $13.50; nut, $13.35; pea, $10.50, and buckwheat, $6.50. Domestic coke is unchanged at $8.50 and briquets are $9.

Milwaukee coal dock managers report a heavy demand for all kinds and sizes of coal, with an increase of interest in anthracite, which local retailers advanced 10c. a ton Sept. 1. On the 10th 60c. is to be added to the price of coke, which was advanced 50c. a ton Aug. 1. There also was a sharp advance in Pocahontas last week. The inflow of coal by cargo continues steady.

Southwest Busier but Cautious

As demand in the Southwest continues to improve with the approach of winter the price of Kansas lump is becoming firmer at $4.50, though some operators still quote it at $4.25. Mines in Kansas are working virtually full time and others are being opened. Kansas is the only state of the Southwest where stable conditions prevail, and even there operators show a tendency to limit production rather than gamble on the future by opening up in excess of present demand. In Arkansas conditions are unchanged from the last few weeks. A few mines are working under the 1917 scale, others under that of 1924, and others are closed pending the stabilization of wages at a reduced figure. In Oklahoma, union opposition to operation under the 1917 scale grows steadily more pronounced, exerting a psychological depression on the market that denies the open shop mines an opportunity to demonstrate how effectively they might be able to supply a normal demand.

Demand for domestic coal, both lump and nut, as well as slack, continues to increase in Colorado, and mines are speeding up production. Inquiries continue to come from territory heretofore unapproachable. Mines are operating without any labor difficulties.

Effective Sept. 1 the price of Walsenburg lump is $5.50; washed nut, $4.50; washed pea, $3; Trinidad coking coal over 6-in. screen, $4.25; over 3-in. screen $4; nut, $3.75; pea, $3; Trinidad Segundo coke, $7.50; Crested Butte high

grade anthracite No. 1 and 2, (furnace size), $7.25; Nos. 3 and 5 (base burner size), $7.75.

The coal business in Utah is getting better. Dealers are placing larger orders, most of which are for immediate delivery rather than storage. Business, however, is not even now what it ought to be, and if the present car shortage develops to serious proportions many will go without coal this fall and early winter.

The industrial market for coal continues steady, though business is none too heavy. The mines and smelters, cement plants and railroads are among the largest consumers. The sugar companies are buying a little coal, but supplies held over from last year, on account of a short run, will prevent their taking as much coal this fall as they would otherwise have taken. The slack market is described as "fairly easy." A few weeks ago it was difficult to supply the demand on account of the shorter working time. Prices remain unchanged. There is practically no discussion now regarding prices. The labor situation is excellent.

Bookings Lively at Cincinnati

With several northern Ohio cities practically down to bed rock on smokeless supplies the bidding for "car numbers" at Cincinnati sent the market to about $5 for lump, with egg in close pursuit. Indiana and northern Illinois dealers accustomed to low volatile tonnage at this time of year added their business and an uncommonly large tonnage was booked in the first few days of the month. Some of the wholesale houses and direct selling agencies, especially those of the New River field, soon were taking business at the market for what available coal they would have for the rest of the month. Stove and nut moved up to $3@$3.50, and while mine-run was stationary and strong at $2.50 it was an open secret that another step up could be expected there. Screenings were solid at $2, mostly because the heavy contracting to byproduct plants had left little free coal in the large make of domestic sizings.

Locally little credit is given to the anthracite troubles for the general advance in prices, dalliance of buyers who could have had coal weeks ago being stressed as the real reason.

The upward move in high volatiles has not been so pronounced. Harlans and Elkhorns lead the Kentucky list, with the best block at $2.75@$3.25. Egg trails a little while the best gas mine-run is strong around $1.75. Low grade steam mine-run may be had around $1.35—the biggest spread, top and bottom, in this make for nearly a year. Due to the action of certain of the Logan County (W. Va.) producers the spread on 4-in. lump is not so great with $2.50 as the low and $2.75@$3 the top. The rest of the list is about the same as the Kentucky offerings.

Local retailers are now attempting to follow the smokeless market with a quotation of $9 for smokeless lump, "good for one week only." On mine-run, where supplies are assured, the price is $6.50 and some asking 25c. more for hilltop delivery. No great change has been made in bituminous pricings with $6@$6.50 for lump and $4@$4.50 for slack.

With the anthracite strike a reality, demand for all kinds of domestic coal has increased at Columbus. Smokeless grades have been practically withdrawn from the market. Other grades of West Virginia coals, including the semi-smokeless varieties, also have strengthened to a large extent. Retail prices have advanced to a certain extent, especially in smokeless grades, which are selling at $8.50@$9.25 delivered. Splints are $7.25@$8 and Hocking and other Ohio mined grades are firm at $6.50@$6.75.

There is no corresponding demand for steam grades in the Ohio market, however. Some quiet buying is reported, but prices have not advanced to any extent. Large users, including utilities and large manufacturers, have placed some contracts recently. Practically all school coal has been delivered, but municipalities and public institutions will soon place orders. Railroad business is pretty well taken care of.

Some Ohio mines which have been idle for a year or two and even longer have been prepared for starting and quite a few are in operation. Production figures have increased to about 35 or 40 per cent of capacity in the southern Ohio field.

The eastern Ohio market, in both anthracite and bituminous, has been stimulated by the anthracite strike, causing consumers of both steam and domestic to enter the markets.

Prices, therefore, are holding firm at the higher levels, to say nothing of the further sharp advances in smokeless bituminous and anthracite for domestic use. Pocahontas is quoted at $5 per ton for lump, f.o.b. mines, while anthracite is $13.50@$14.

This situation in domestic has been reflected in steam market activity although prices have not been affected to the same extent. Most industrial concerns have or are now buying not only for current needs but also building up a small reserve.

All eastern Ohio mines which are operating are reported to be receiving orders almost to capacity, but as yet no additional mines have been reopened to take care of additional demand.

Pittsburgh Trade More Cheerful

The turnover in Pittsburgh district coal continued to increase last week at a moderate rate and sellers are more cheerful. Domestic coal movement is now moderately heavy and prices have been hardening somewhat. The steam slack market must have more absorbing power, for the increased production due to shipment of domestic lump has not lowered prices, which are still quotable at $1.30@$1.35. Production in the Pittsburgh district as a whole probably is above 25 per cent now, is against 20 per cent or less in July.

The strike is on, but has not affected the Buffalo coal trade much. The bituminous trade is just the same. A few shippers are trying to get a better price with a trifle of success, but as a rule the old bottom prices hold very much as they did. All the mines are asking more. As a rule they are not getting it in this market. Still everybody is hopeful. Prices are unchanged.

New England Market Stiffens Further

The steam coal market in New England is responding to the pressure exerted by volume shipments west from the West Virginia smokeless districts. A shortage of anthracite is relied upon to provide a ready market for Pocahontas and New River lump, egg and nut in territory north and west of the Ohio River and every effort is being made to crowd these coals in that direction. Mine-run also is being shipped west in quantities at $2.60@$2.75 per net ton at the mines, a price level that would mean $5.43@$5.60 per gross ton f.o.b. vessel at Hampton Roads. Receipts at the tidewater terminals are relatively light in consequence, and to help out in loading boats spot coal is in strong request. Coastwise coal has already brought $5.25, and unless the Western market cracks wide open under the strain of heavy consignments it is likely the Hampton Roads price will continue on its upward trend.

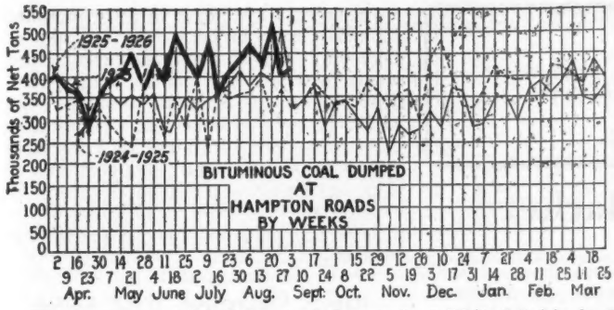
Prices on cars Boston and Providence also are mounting from day to day; $6@$6.25 as a market level has given way to $6.25@$6.50, and there is more buying in evidence than a week ago. The larger storage piles begin to show inroads, and factors who were pressing coal on their trade are now conservative in deliveries and are showing some anxiety over diminished receipts from Norfolk and Newport News. As yet there cannot be said to be anything approaching a broad market in this territory, but buyers are showing keener interest, and if the further course of prices is at all convincing there should be a really active market.

Quotations on coals from central Pennsylvania also are advancing. This is particularly true of the harder textured coals that are suitable for sizing and will carry well in shipment as substitutes for anthracite. Steam coals as such also are beginning to react.

Strength Appears in New York Market

Considerable strength developed in the bituminous coal market at New York in the latter half of last week. Low volatile coals advanced an average of about 25c. for some grades and there was a heavier demand for low volatile domestic coals. There was no increase in demand noted for high volatile coals, however. Operators complain of the labor shortage at the mines due to the hunting season and the shift of many miners to other fields of industry.

Heavier demand has resulted in many operators being sold up for the better grades of coal for some weeks, and buyers are now willing to consider the cheaper grades in making purchases. So far there have been but few inquiries for screened bituminous coals from hard coal users but coke is gaining strength rapidly.



There was an added demand for coal at Philadelphia last week, but it is believed that after the first effects of the anthracite suspension wear off there will be a slight moderation in the soft coal market, as the usual consumers of anthracite steam grades are well stocked and continue to get good supplies from the storage yards. With so much strike talk in the air, however, the usual buyers of soft coal have been ordering more.

All prices are given now subject to acceptance on a given date. Contract customers are coming in for their share of fuel better than for some weeks.

There is considerable activity in gas grades, especially screened coal, although the largest users of this size are slow to accept coal at any increase in price. The railroads seem more interested in mine-run and are laying by more than usual and at a higher price.

Influenced by a seasonal demand for coal and the call resulting from a desire to protect industries against any sudden rise in the market due to strike complications, the price of all classes of bituminous coals advanced steadily in Baltimore last week. The increases were 20c. to 25c. Despite increased inquiry and closings on contracts, there is plenty of fuel to meet all needs, and some further change in the relationship of supply and demand probably will be necessary before there is a really sharp rise in the market. A gradual increase in price, however, is predicted. Exports of coal from Baltimore during August were larger than the foreign shipments from local terminals during any month since July, 1924.

At Birmingham consumers are now buying steam coal fairly well, the demand for high-grade washed and mine-run showing the greatest strength, with supply and requirements under present operating conditions about equal. Well prepared product from the Cahaba, Black Creek and Corona seams is fairly well sold ahead and such mines are operating on greatly improved schedules over a few weeks ago. There is also some improvement in demand for medium and lower quality commercial coal.

Domestic trade is picking up some. Car lots are being bought in greater number for shipment to individual consumers and community centers, while dealers who have not stocked any coal of consequence are beginning to make inquiry and place some business.

Quotable prices on steam coal are in line with figures last given. Domestic sizes advanced Sept. 1, Big Seam lump ranging $2@$2.50; Carbon Hill, $3.25; Cahaba, $4.25@$5; Black Creek, $4.50; Corona, $3.50; Montevallo-Straven, $5.25; Montevallo, $5.50 f.o.b. mines. Egg and nut sizes are about 25c. and 75c. respectively under lump schedules. Production is on a basis of 385,000 net tons per week.

Foundry coke is active at $4.50@$5 ovens, with egg and nut sizes moving at $3.75@$4 and $3.25 respectively, demand being sufficient to move present output readily.

All Sizes of Hard Coal in Demand

Anthracite of any size is in good demand at New York. As soon as the suspension became a reality buyers appeared from every direction and most of the the coal lying about the harbor was quickly picked up.

Company coals are being carefully pro-rated among regular buyers and the independent producers are swamped with orders. The old line companies are drawing heavily on their storage places for chestnut and pea coals while some of the independents are sold out.

Stove and egg are on everybody's order and there is a heavy demand for chestnut and pea. Although independent domestic coals were quoted as high as $14 for inland buyers they were not willing to pay the price, and it was said not many sales were recorded at that figure. The same coals at tidewater were quoted at about $1 or more lower. Stock chestnut coal was quoted around $11.

The steam coals are stronger and in good demand.

Philadelphia consumers have finally awakened to the necessity of buying coal and when news of the suspension was broadcast they came with a rush, and many yards are now sold up on as much tonnage as they expect to get. The supply of stove was quickly exhausted, and buyers are taking nut instead. Pea is not in much demand, but it is bound to come into its own when the other sizes run down.

One company shipper has added 10c. a ton to prepared sizes for September and 50c. for pea, stating the latter expense is for the cost of storage. Inasmuch as the dealers have absorbed the monthly raises since spring, the general tendency now is to increase retail prices. Present retail quotations are: Egg, $15; stove, $15.50; nut, $15, and pea, $10.75.

Steam sizes in the storage yards are being picked up quite briskly and shipments to manufacturing plants are quite heavy. It will take close to six weeks or two months, however, before there will be anything like a shortage of steam coal.

The anthracite strike was accepted by Baltimore hard coal consumers in the most complacent manner. Nobody is excited and orders to the retailers are not especially heavy for this season. Some delayed shipments are still coming in, although these are diminishing. Stocks on hand probably will take care of the situation here into early October.

At Buffalo the only change since the strike began, so far as the hard-coal trade is concerned, is that coke dealers are putting up the price and anthracite retailers are practically out of coal. There is the usual cry among the local papers that the hard-coal companies are boosting prices, but the fact is that only the regular 10c. advance is generally made. One company did advance pea 50c., but it claims that it was that much below the others and is now just on a par with them.

Independent anthracite prices vary, but one concern is sending out quotations at $12 for stove, $11.50 for chestnut and $11 for egg at the mines, which is a premium of about $3.50 over schedule prices.

Lake shipments last week totaled only 32,600 tons, including 17,300 tons for Duluth and Superior, 7,800 tons for Milwaukee and 7,500 tons for Green Bay.

Connellsville Coke Market Sees Possibilities

Almost all activity in Connellsville furnace coke in the past few weeks has been by Eastern buying, related more or less to the anthracite suspension. This has advanced the market from the July level 50c. to 75c. Spot furnace coke is quotable at $3.35@$3.65, the same as a week ago, with somewhat less Eastern buying in the past few days. Some observers are of opinion that the advance has come about a month too soon, there being as yet not enough tension to induce Eastern buyers to take hold freely. On the other hand, the fact that the production of 2,000,000 tons a week of anthracite has been stopped, while the output of coke by the merchant ovens of the Connellsville region has increased by only about 7,000 tons a week, and could hardly increase by as much as 50,000 tons altogether, in view of labor conditions, suggests that only a little buying of coke as an anthracite substitute would naturally have quite an effect on the market.

A blast furnace is understood to have bought a supply of coke for the month of September. Furnaces in general seem to be covered pretty well for fourth quarter and pig iron conditions do not suggest that any idle furnaces will have to go in.

Spot foundry coke has been gradually stiffening, and is now quotable 25c. higher, at $4@$4.50. The $3.75@$4.25 quotation had prevailed since early in May.

Car Loadings, Surplusages and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Aug. 22, 1925	1,080,107	201,095
Previous week	1,064,793	190,979
Week ended Aug. 23, 1924	982,760	160,267

	Surplus Cars		Car Shortage	
	All Cars	Coal Cars		
Aug. 22, 1925	195,327	53,755	.....	.....
Aug. 14, 1925	217,190	62,058	.....	.....
Aug. 22, 1924	258,271	119,338	190	.....

Foreign Market And Export News

Business Scarce in British Market Despite Lower Prices

The steam coal trade in Wales still remains in a very unsatisfactory state, and the immediate outlook is far from encouraging. As mentioned in a previous report, a large number of buyers at home and abroad laid in stocks in anticipation of a national stoppage, and these stocks are still lasting. In addition to this other foreign buyers sent their orders to America and Germany instead of to Wales.

Apart from the anthracite industry, where work is entirely suspended as a result of the strike, many steam coal pits are forced to suspend operations from time to time owing to their failure to get trucks cleared. Another difficulty from the point of view of the collieries which have all along remained open is the fact that pits which had previously been closed have now reopened as a result of the government subsidy.

The inquiries in Wales are very largely of a market-testing character. The operators have yielded gradually under buyers' pressure to reduce prices, and in the case of small coals the figure has reached an absurdly low level.

The Newcastle market is no better, and inquiries for export are almost negligible. Prices have reached their very lowest limit, even taking into account the government subsidy, but orders are still going to Germany. The North of England collieries are literally operating from hand to mouth.

Output of British collieries during the week ended Aug. 22 totaled 4,425,000 tons, according to a special cable to *Coal Age*. This compares with 4,370,000 tons produced the week before.

Market Active and Strong At Hampton Roads

The market at Hampton Roads last week was "jumpy" with prices about $1 above the previous week as result of the anthracite strike. There was plenty of bituminous coal, however, although a good many mines in the southern West Virginia fields had not begun operating on full time as yet, pending an expected increase in demand.

Domestic coal jumped $1 a ton at retail for both anthracite and bituminous, although consumption of the former is not great in this territory, and the price jump is not expected to be much greater. A great many consumers of anthracite were laying in supplies of soft coal. The tone of the market was exceedingly strong and shippers took orders without effort.

Industrial and House Coals Gain Slightly in French Market

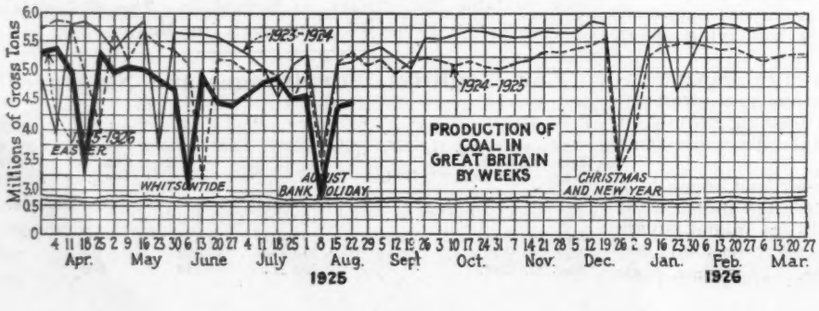
The activity which prevailed about a month ago has almost completely disappeared and the market is rather somnolent in comparison. Demand in the Nord and Pas-de-Calais, however, is being maintained and orders are fairly satisfactory. Nevertheless it is not likely that stocks are being added to at present; in fact they probably are decreasing slightly.

In household grades screened bituminous coals were perhaps a little less neglected last week than during the previous week, owing to more orders from Belgian customers. No change is discernible in the favorable situation of the market for sized coals.

Most industries show no change in their consumption and, consequently, their purchases of coal, but a few are slightly increasing them.

Empty cars are now coming in in sufficient numbers. River craft, on the contrary, are scarce and barges for coal were obtained with difficulty at 24 fr. for shipment from Béthune to Paris, the latter rate showing a rising tendency.

Following the 5 per cent wage increase granted the Sarre coal miners, the miners of the neighboring Lorraine collieries have asked for a similar advance. In a meeting with the miners' delegates held at Metz, Aug. 11, the owners declared that competition from the French northern collieries and from German imported coals would not permit them to grant any increase in wages, but that they would, however, carefully study what could be done to improve the situation and thus be able to give some satisfaction to the miners' claim.



French fuel imports in July included 1,365,575 tons of coal, 353,752 tons of coke and 89,008 tons of patent fuel, totals for the seven months ending with July being 10,089,383 tons of coal, 2,979,811 tons of coke and 681,659 tons of patent fuel. Exports in July were 300,249 tons of coal, 39,000 tons of coke and 14,103 tons of patent fuel, the seven months, total being 2,592,846 tons of coal, 215,960 tons of coke and 76,990 tons of patent fuel.

Export Clearances, Week Ended Sept. 5, 1925

	Tons
FROM HAMPTON ROADS	
For Canal Zone:	
Amer. Str. Achilles, for Cristobal	12,065
For Italy:	
Ital. Str. Mincio, for Genoa	6,946
Ital. Str. Vincenzo Florio, for Genoa	9,888
Ital. Str. Concordia, for Naples	9,505
For Brazil:	
Br. Str. Dalemoor, for Rio de Janeiro	7,500
For Chile:	
Nor. str. Romsdalshorn, for Iquique	3,172
For Canada:	
Dan. Str. Paris, for Montreal	4,479
Dan. Str. Virginia, for Quebec	5,047
For Nova Scotia:	
Amer. Schr. Jean, for Yarmouth	1,313
For Miquelon:	
Nor. Str. Facto, for St. Pierre	2,236
For Newfoundland:	
Nor. Str. Certo, for Humbermouth	3,237
Nor. Str. Evanger, for Botwoodville	6,412
For British West Indies:	
Dan. Str. Nordamerika, for St. Louis	3,468
For Cuba:	
Br. Str. Ardenhall, for Havana	4,035
Br. Str. Hollypeak, for Cienfuegos	3,308
For Virgin Islands:	
Br. Str. Gibraltar, for St. Thomas	5,516
FROM BALTIMORE	
For Italy:	
Ital. Str. Premuda, for Naples	6,399

Hampton Roads Pier Situation

(Gross Tons)

	Aug. 27	Sept. 3
N. & W. Piers, Lamberts Pt.:		
Cars on hand	1,618	1,181
Tons on hand	101,791	69,586
Tons dumped for week	149,926	147,577
Tonnage waiting	14,000	5,000
Virginian Piers, Sewalls Pt.:		
Cars on hand	700	514
Tons on hand	55,550	40,550
Tons dumped for week	95,437	102,793
Tonnage waiting	23,550	10,600
C. & O. Piers, Newport News:		
Cars on hand	2,112	1,969
Tons on hand	106,290	95,315
Tons dumped for week	122,328	125,871
Tonnage waiting	9,900	25,530

Pier and Bunker Prices, Gross Tons

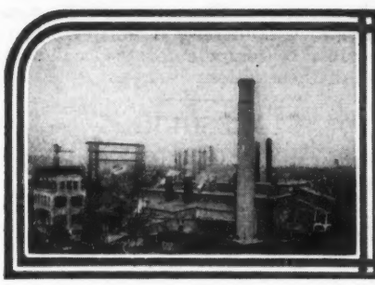
	Aug. 29	Sept. 5†
PIERS		
Pool 1, New York	$5.35@$5.60	$5.35@$5.60
Pool 9, New York	4.85@ 5.00	*4.80@ 5.00*
Pool 10, New York	4.50@ 4.65	**4.50@ 4.70**
Pool 11, New York	4.25@ 4.50	**4.30@ 4.55**
Pool 9, Philadelphia	4.80@ 5.00	4.80@ 5.00
Pool 10, Philadelphia	4.50@ 4.70	4.50@ 4.70
Pool 11, Philadelphia	4.30@ 4.55	4.30@ 4.55
Pool 1, Hamp. Roads	4.50@ 4.75	**5.40**
Pool 2, Hamp. Roads	4.60@ 4.85	**5.15**
Pools 5-6-7, Hamp. Rds.	4.60	*4.50*
BUNKERS		
Pool 1, New York	$5.60@$5.80	**$5.60@$5.85**
Pool 9, New York	5.10@ 5.25	*5.05@ 5.25*
Pool 10, New York	4.75@ 4.90	**4.75@ 4.95**
Pool 11, New York	4.50@ 4.75	**4.55@ 4.80**
Pool 9, Philadelphia	5.00@ 5.20	5.00@ 5.20
Pool 10, Philadelphia	4.70@ 4.85	4.70@ 4.85
Pool 11, Philadelphia	4.55@ 4.75	4.55@ 4.75
Pool 1, Hamp. Roads	4.60@ 4.85	**5.50**
Pool 2, Hamp. Roads	4.70@ 4.95	**5.25**
Pools 5-6-7, Hamp. Rds.	4.70	*4.50*

Current Quotations British Coal f.o.b. Port, Gross Tons

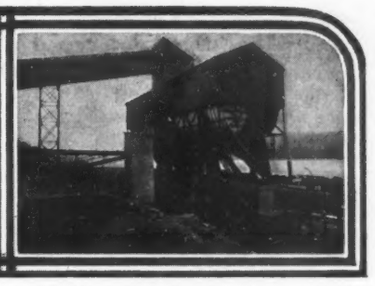
Quotations by Cable to *Coal Age*

Cardiff:	Aug. 29	Sept. 5†
Admiralty, large	24s.@24s.6d.	*24s.*
Steam smalls	12s.6d.@13s.	*12s.6d.*
Newcastle:		
Best steams	16s.3d.	*14s.9d.@15s.6d.*
Best gas	24s.9d.	*17s.*
Best bunkers	17s.9d.	*15s.*

† Advances over previous week shown in **heavy type**; declines in *italics*.



News Items From Field and Trade



ALABAMA

An explosion of a pocket of gas in the Dogwood Mine of the Little Gen Coal Co., in Shelby County, Aug. 27 resulted in the instant death of Will Holley and the fatal injury of Edward Clayton Roman, both white, while two negroes were badly burned from the flash.

A contract between the State of Alabama and the Bessemer Coal, Iron & Land Co. by which the former has been operating at Belle Ellen Mines with convict labor, was cancelled effective Aug. 31 and free labor will be employed in future, the mines to be operated by the owners. Under the lease agreement which has been in effect since February of this year the state not only mined the coal but also negotiated the sale of the product, paying the owners a royalty on the tonnage taken out. It is understood that state authorities have found this to be an unsatisfactory arrangement and for this reason decided to abrogate the agreement. Convicts are worked by the state at Flat Top, Banner, Aldrich and Wegra mines under a system by which the coal is mined and loaded on railroad cars at an agreed price per ton, the state not having anything to do with the sale of the product. Convict labor has been employed in whole or part at the Belle Ellen operations for many years, there being four openings.

Preparations are being made for the participation of about fifty teams from mines and industries in this district in the seventh annual field meet which will be held at Rickwood Park, Birmingham, Oct. 6, under the auspices of the Alabama Mining Institute, U. S. Bureau of Mines, Red Cross and State mining department. A program of events and prizes has been arranged and valuable trophies will be awarded the winning teams by the Alabama Mining Institute, which annually donates these prizes and plays a leading role in fostering and encouraging rescue and first-aid work in the coal-mining field. The Institute will hold its annual meet Oct. 6 for the election of three members of the governing board, which latter means officials for the next year.

ARKANSAS

District 21 of the United Mine Workers is in the hands of a receiver, according to information received from Fort Smith. Upon complaint of the Greenwood Coal Co. and others that the district was insolvent and that the mines had suffered damage at its hands, Chancellor J. V. Bourland appointed State Senator J. V. Brewer receiver in an order commanding the district as defendant, its officers, locals, banks and coal companies to turn over to the receiver all sums in their hands held in behalf of the district.

C. L. Melton, of Alix, early in August leased the No. 6 mine of the Western Coal & Mining Co., at Denning.

COLORADO

Herbert Addison, recently appointed receiver by the District Court for the International Fuel Co., which had large holdings in Routt County, sold the property at a foreclosure sale at Denver, Aug. 28, for $71,297 cash to Arthur Ponsford, attorney, who is acting for Pat Quealey, of Kemmerer, Wyo., and H. C. Marchant, of the Superior Coal Co., Rock Springs, Wyo. The original investment in this property was in excess of $300,000. The Routt County field is expected to be a keen competitor of other producing districts as soon as the Moffat Tunnel is completed, in 1926, which will give the Routt County operators a direct line of operations into Missouri River territory.

Judge George F. Dunklee, sitting in the second division of the district court, has authorized H. Van Mater, receiver of the National Fuel Co., to cancel lease for the mining of coal on what is known as the Reynolds-Zarlengo tract, adjacent to the Puritan mine in Weld County, due to unfavorable conditions.

The Clear Creek Development Co., in an action instituted in the District Court at Denver, Aug. 27, seeks to have set aside a foreclosure sale in which certain property of the Empire Consolidated Mines, Inc., is alleged to have been sold to Charles Cutler. Cutler, it is stated, instituted the foreclosure suit. A Denver firm intervened, claiming a superior lien on the Empire's property and the foreclosure decree was entered in its favor, according to the complaint. The plaintiff company alleges that a judgment of $21,000 it obtained against the Empire Consolidated Mines was based on a contracted indebtedness existing prior to the foreclosure suit, and declares that no part of the judgment has been paid.

ILLINOIS

A corps of men have been engaged to put the boilers of the Keystone mine and the Consolidated Co.'s mine at Herrin in working condition. These mines, employing about 700 men, are expected to resume operations soon.

INDIANA

Extensive additional trackage is being laid by the Big Four R.R. near Petersburg, where the road's southern coal terminal is located, to care for the increased coal business in southern Indiana. Opening of new strip mines in southern Pike County has increased the tonnage handled over the E. & I. division of the Big Four and necessitated laying of additional side tracks. The Pike County Coal Co., owners of thousands of acres of rich coal lands in western Pike County, has petitioned the Big Four to run a spur from Petersburg to Oatville, a distance of eight miles.

KANSAS

A talk at Pittsburg, Aug. 26 by Vernon Allison, associate chemist with the safety department, U. S. Bureau of Mines, on the dangers of dust and methods of controlling it, opened a drive for safety in the southeastern Kansas field which will continue three or four months. Mr. Allison announced that a representative from the department soon will enter the Kansas field to carry on the work. Mr. Allison discussed the dangers of open lights in dusty mines and the two methods of controlling the dust: sprinkling and rock dusting. Of these, he said the Bureau had found dusting with limestone dust the most effective.

Arrangements have been completed in southeastern Kansas to send two teams to the international first-aid and mine-rescue meet at Springfield, Ill., Sept. 10, 11 and 12. The team from Western Coal & Mining Co.'s mine No. 20, which was first in the Kansas state contest, June 12, will be one, and a team from the Jackson-Walker Coal & Mining Co., which took second in the June contest, will be the other.

Permission to buy seven miles of railroad it already owned was given the Frisco R.R. Aug. 24 by the Kansas Public Service Commission. The seven miles is a coal road, known as the Pittsburg & Columbus, operating from Kramer to Weir City, Kansas. The Frisco owns all the stock and all the bonds and has been operating the line under lease for many years. The commission's decision makes it possible to make an actual transfer and incorporate the Pittsburg & Columbus road in the Frisco system.

KENTUCKY

A gas explosion at Mine No. 3, Black Diamond Coal Mining Co., Drakesboro, on the morning of Sept. 1, following a slate fall, which released the gas, caused two men to be instantly killed, and one to be seriously burned. Four men of the seven in the entry were not injured. The mine had resumed operations within sixty days, after being down for over a year account of the western Kentucky strike.

The Imperial Elkhorn Coal Co., Sergent, is about to begin the erection of a boarding house.

The Kentucky Utilities Co. has announced its outright purchase of the big mine power plant of the W. G. Duncan Coal Co. at Greenville, for $1,000,000, including the 8,000-hp. generating plant, coal acreage to supply fuel for the plant for fifty years, two artificial lakes for boiler water, three dwelling houses for employees, 12 miles of 33,000-hp. high tension electric line, two pumping stations and switching station. The Kentucky Utilities Co. will supply the company with about 3,000 hp. when operating. The plant has been under a lease arrangement with the Kentucky Utilities Co. for some time.

Boddie and Powell, Madisonville, strip mine operators, are having test holes drilled on an 800-acre tract of strip property south of Hartford. The Maumee Collieries Co., of Terre Haute, Ind., started test drilling in the same section some time ago, but was forced to abandon the work because of lack of funds, it is said.

Further improvement of traffic handling facilities in the eastern Kentucky and West Virginia districts in which the Chesapeake & Ohio R.R. operates are promised in a statement of President W. J. Harahan, of the road, regarding contracts to be placed soon for $8,000,000 of additional equipment, principally locomotives, cabooses, two steam ditchers and two locomotive cranes.

The Elkhorn Collieries Co., Mater, is about to erect a boarding house at Kona.

Announcement has been made that the Mitchell-Willis Coal Co., of Gorman, on First Creek, in the Hazard field, will soon be in operation after a shutdown lasting nearly two years. The Reliance Coal & Coke Co., at Glomawr, which controls the Mitchell-Willis mine will operate it.

The Elkhorn Collieries Co., of Thornton Creek, with a large mine and loading tipple, is reported to be starting development of a large vein of fine cannel coal, on Colly Creek, across the mountain. Coal from the new opening will be brought across and loaded through the tripple at Thornton.

MINNESOTA

The C. G. Hartin Coal Co. of St. Paul, whose business was sold to the Reiss Coal Co. several years ago, has been formally dissolved as a corporation.

A petition signed by seventeen prominent retail coal dealers of Minneapolis went to the City Council asking an ordinance licensing and regulating fuel dealers. It was suggested that an annual license fee of $200 be charged. This would be a move of value to the consumer and to the trade in that it would assure stability in the retail trade and reasonable assurance of reliability. The matter was referred to a committee.

Companies operating coal docks at Duluth reported a surprisingly active demand from Winnipeg for anthracite and Pocahontas coal. Buying from that quarter is being prompted by the trade up there not having recovered from recent labor troubles at Alberta mines and fears that further lake shipments of American coal for the Canadian trade may be blocked for the balance of this season. The Pittsburgh Coal Co. and the Northwestern Fuel Co. have been participating in that trade to some extent.

Aloysius E. Smith, of St. Paul, doing business as the Block Diamond Coal Co., has petitioned for a discharge from bankruptcy, after having complied with the requirements of the bankruptcy law.

A company is being formed in Minneapolis to establish a barge line to operate upon the Mississippi River to the Twin Cities. Coal would be a natural upbound cargo. Southern Illinois coal operators also are said to contemplate establishing a barge line up the river to compete for the coal business of these cities.

MISSOURI

Prosecutions for selling short weight coal in St. Louis in the future will be brought under a state law, according to Inspector of Weights and Measures C. G. Haley and Prosecuting Attorney Albert Schweitzer. Heretofore arrests have been made under a city ordinance carrying a fine of $5 to $100. The state law provides for a jail term as the maximum punishment.

NORTH DAKOTA

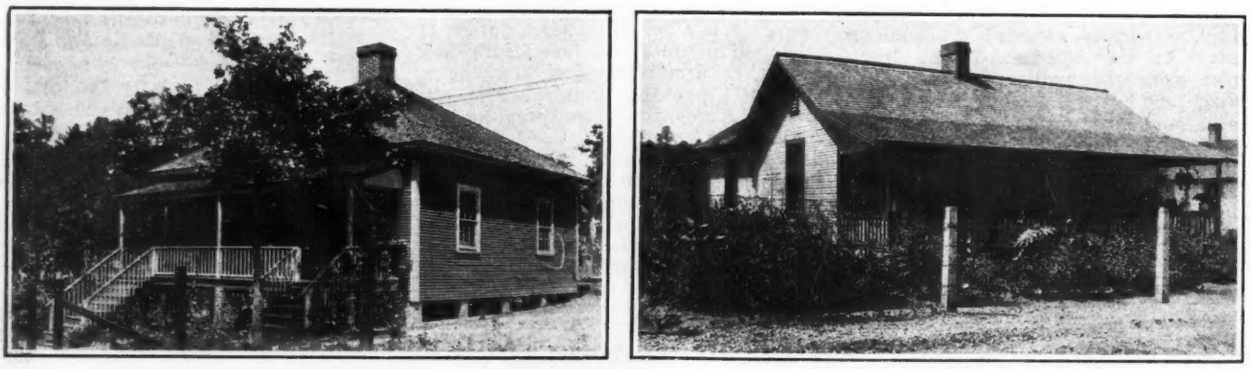
The district court at Bismarck upheld the awards of the State Board of Administration in the matter of coal supplies. The Washburn Lignite Coal Co. brought suit to prevent the state from entering into contracts with other companies for coal, holding that, its bid being the lowest, it was entitled to the business. The court held that the judgment of a court could not be substituted for the discretion of the State Board of Administration in the matter. The ruling was that even if an award were erroneously made, unless it was shown to be by collusion or fraud, it could not be interfered with.

OHIO

A new mine is to be opened soon in the Crooksville field, according to a recent announcement. The mine is the property of the Cres-Mars Coal Co., which operates mines 3 and 7 in the Crooksville field. Ten or 15 men will be employed at first. The tipple of the mine is not quite completed as yet, but the beginning of operations is not far distant.

Calvin Holmes, of the Holmes Coal Sales Co., Cincinnati, has announced that through an arrangement with Abner Lunsford the excess output of the Banner Fork mines, at Kentenia and Tisdale, Ky., owned by Henry Ford, will be handled by his concern.

The tipple of Mine No. 5 of the Stalter-Essex Coal Co., in Pomeroy Bend, destroyed late in May, has been rebuilt and the mine is in full opera-

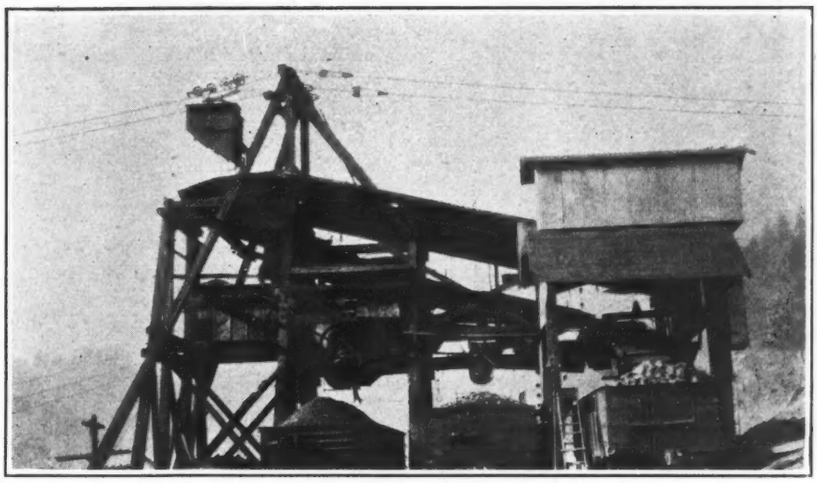


Southern Coal Mine Homes Are Well Kept

Improved streets, neat fences and garden and lawn prizes have done much to foster present-day civic pride in most industrial communities, particularly coal mine villages. This picture shows the three- and four-room types of houses erected by the Tennessee Coal, Iron & R.R. Co., at its Edgewater (Ala.) coal mine. Note the profusion of flowering and foliage plants everywhere.

tion. The tipple of Mine No. 1 of the same company, which was burned Aug. 14, has not yet been rebuilt but steps are being taken to reconstruct it.

Practically all of the larger mines in the southern Ohio field which have been equipped with screens and where lump can be produced are either in operation or will soon be opened. The Sunday Creek Coal Co. has opened all of its mines where screens have been installed and is producing about 6,000 tons daily as compared with less than half that amount produced during the summer months. The George M. Jones Co. has opened two additional mines, making four large operations in all. The mines of the Pittsburgh Coal Co. both in the Hocking Valley proper and in the Pomeroy Bend field are going, as are the mines of the Stalter-Essex Coal Co. and the mines of the Essex Coal Co. Many of the smaller mines will soon be started if conditions warrant.



No. 11 Tipple, Stearns Coal & Lumber Co., Yamacraw, Ky.

Receiving station of cableway and tipple, equipped with shaking screens and loading booms. The cars are handled under the tipple by car retarders.

OKLAHOMA

The expansion shown by the mining industry in the McAlester region for this time of the year and the increasing output of the mines has led the Rock Island R.R. to put on a train out of Haileyville, local area division point. This train service reaches from McAlester to Wilburton, caring for the coal output of numerous small towns in between. Outside coal mines are served by spurs with strings of cars placed on sidings, or pulled out loaded with each daily trip.

The number of miners in the McAlester region working under the open-shop system with the 1917 wage scale is estimated at somewhat over 2,500 with 600 in the Henryetta district. It is not known as yet what per cent of the men are still at work but the number varies from normal in some of the Henryetta mines to a complete shutdown of No. 5 mine near Krebs, where the Italian miners all walked out as a result of a meeting in Krebs Monday evening. There are about 30 coal mines in the McAlester-Wilburton fields and smaller numbers at the other coal towns such as Coalgate, Lehigh, Howe, Bokoshe, and near Russellville, Ark. Only two mines in eastern Oklahoma report that they have been working with union miners under the 1924-1927 wage scale agreement.

PENNSYLVANIA

Operations are still on the increase in the Connellsville coke region. The H. C. Frick Coke Co. has started up Leisenring No. 3 mine and fired 300 ovens at that plant, in addition to 150 more ovens at other plants already in operation. The LaBelle Iron Co. has resumed operation at its coal and coke plant on the Monongahela River above Brownsville. The Husted-Semans Coal & Coke Co. has increased operations, and the Snowdon Coke Co. has started its mine and all of the 300 ovens at its plant at Linn, near Brownsville.

Figures just compiled by the State Department of Forests and Waters show that fourteen Pennsylvania tree planters put out more than 100,000 trees each during the spring of 1925. Some of the planters requested from the state a larger number of trees than was allotted to them, but it was found necessary to limit the number to 100,000 after the tree planting season got under way, so that the smaller planters could have trees available for planting. Among the large planters were the following: Clearfield Bituminous Coal Co., Indiana, 212,970 trees; Rockhill Coal & Iron Co., Robertsdale, 100,006; Wilmore Coal Co., Philadelphia, 100,000; Berwind-White Coal Mining Co., Philadelphia, 67,900; Allegheny River Mining Co., Kittanning, 95,000; Buckeye Coal Company, Nemacolin, 67,500; Colonial Colliery Co., Natalie, 65,000; Saltsburg Coal Mining Co., Leechburg, 55,000; Kingston Coal Co., Kingston, 50,000; Potts Run Coal Co., Clearfield, 55,000.

WEST VIRGINIA

With the mines of northern West Virginia producing 555,550 net tons of coal in the week ended Aug. 29, more coal was loaded in the 12½ counties than in any other week since September, 1923.

The Baltimore & Ohio R.R. has put all of its old employees to work and called back into the service all furloughed employees in the Fairmont district due to the increased coal loading. No new men have been put to work, however.

Rumors were afloat in northern West Virginia last week that coal operators in the New River fields were considering the advisability of raising wages $1 on the day and 10c. a ton on the loading rates to curb any movement to reunionize the New River fields.

According to information received in Fairmont, Col. Clarence W. Watson, president of the Consolidation Coal Co., and his guide, Billy Stanley, had a narrow escape from drowing recently when their 26-ft. fishing boat struck a submerged wreck four miles from the head of Wolf Island, near Cape Vincent, N. Y. Nearby ships failed to hear the distress call and Colonel Watson bailed out the boat with a two-quart dipper, while the guide pulled to Wolf Shore, where repairs were made. The propeller and a 5-in. board were pulled off the Colonel's boat, which caused the trouble.

Ground has been broken on the Hoult road, near Fairmont, for the erection of a new plant in which coal-tar products will be manufactured by the F. J. Lewis Manufacturing Co., of Chicago. The plant, it is reported, will cost in excess of $100,000. The raw materials will be obtained from the Domestic Coke Corporation, which is nearby. Creosote oil will be the chief ingredient manufactured at the plant, it is said.

Weirton Steel Co. has announced at Pittsburgh a $10,000,000 improvement program for the works at Weirton. Included in the project are 45 new by-product coke ovens to the present list and a blast furnace.

C. W. McIntire, of New York City, who is in charge of the experimental station of the Consolidation Coal Products Co., a subsidiary of the Consolidation Coal Co., announced last week that a smokeless fuel, which is a substitute for anthracite coal, has been developed at the Fairmont plant. The commercial product obtained by the pretreatment of coal can be marketed as coke and briquets. The fuel is made by means of low carbonization and the plant will start this week to produce 50 tons a day. Out of 50 tons of Fairmont coal, it is said, 30 tons of briquets are obtained. From each ton of coal, in addition to the fuel, there is obtained three gallons of tar, two gallons of light oil and gas running 1,000 B.t.u. obtained.

In the six months ending June 30 a total of 20,677,990 tons of smokeless coal was produced as compared with 17,874,035 tons during the corresponding period of 1924, an increase of 2,803,955 tons. In June alone a total of 3,704,671 net tons of smokeless was produced as compared with 2,885,222 tons in June, 1924, an increase of 819,449 tons. The gain in the Pocahontas district alone was 511,965 net tons.

Artificial Lake Supplies Power Plant

A rainy day at Earlington, Ky. The artificial lake in the background covers 175 acres and constitutes the only water supply of the 6,000-kw. steam plant of the St. Bernard division of the West Kentucky Coal Co. With its wooded shores this lake is a beauty spot of Hopkins County.

New River mines increased their production 120,118 tons over June, 1924; Winding Gulf mines, 105,531 tons, and Tug River mines, 81,835 tons. In June the Norfolk & Western Ry. moved 2,103,435 tons, the Chesapeake & Ohio, 1,050,025 tons, and the Virginian, 551,211 tons. The Norfolk & Western handled a total of 3,231,735 tons of coal and the Chesapeake & Ohio handled 4,740,560 tons.

In a $400,000 improvement program announced by the Consolidated Power & Light Co. in West Virginia, provision is made for the installation of coal handling machinery at Kenova.

CANADA

F. W. Guernsey, who has just returned to Vancouver with a party organized by the Vancouver Board of Trade to make an examination of the Hat Creek coal deposit, with a view to advising the Provincial Government as to the wisdom of building a branch line from Pavilion, on the Pacific Great Eastern, to the mine, a distance of 16 miles, in order to open up the deposit, recommends that exhaustive tests be made to determine the grade of the lower seams before any action toward the construction of the branch line be entertained.

The annual financial statement of the Blue Diamond Coal Co., Ltd., shows a deficit of $88,599 for the year ending June 30, which increased the deficit account to $174,995. Total assets were $2,655,586 compared with $2,143,621 for the previous year, and current liabilities were $493,859.

Production of coke in Canada during July amounted to 89,221 tons, being the lowest tonnage recorded for any month this year and a decrease of 19 per cent from the June output of 109,604 tons.

In view of the strike of the anthracite miners in the United States efforts will be made to obtain a larger movement of Alberta coal to Eastern markets in order to better cope with the emergency. Premier Ferguson and Premier Greenfield are said to have joined in an application to officials at Montreal to further shipments, as the rate, which is a vital factor, will have to be arranged with the Canadian National or Canadian Pacific Ry.

Five hundred additional miners were given employment on Sept. 1 when collieries Nos. 1B, 2 and 4 of the British Empire Steel Corporation went on double shift for the first time since the settlement of the strike was effected. The resumption of night work means that every colliery now operated by the Dominion Coal Co. is working two shifts.

Traffic

Reconsignment of Hard Coal Allowed Free at Detroit

The Wabash R.R. has issued Supplement No. 1 to I.C.C. 5872, effective Aug. 2, which provides as follows: "No charge will be made for a single diversion or reconsignment of anthracite coal at Detroit, Mich., when destined to points beyond located on the Wabash or connecting lines, to which the through rate from point of origin to reconsigned destination is applicable via Detroit, Mich."

New Companies

The Walters Brothers Coal Co., Warrensville, Ohio, has been chartered with an authorized capital of 500 shares, no par value designated, to mine and deal in coal. L. E. Walters, George F. Frank, Antony J. Walters, D. M. Tubman and J. F. Potts are the incorporators.

The Velnon Coal and Wood Co., Inc., of Calgary, Alberta, has been incorporated with a capital stock of $20,000 by Harold A. Jacques, Edna Allen, Lillian Thompson and others.

The War Ridge Smokeless Coal Co. has been organized at Clarksburg, W. Va., with a capital of $100,000. The incorporators are: George L. Duncan, John P. Keeley, E. Bryan Templeman, James J. Biblun and O. J. Billingsley.

The certificate of incorporation of the **Creek Collieries Co.** of Bolivar, Pa., has been recorded in Greensburg, Pa. The capital is $5,000 and the stockholders are J. E. Husband of Pittsburgh, P. C. Ake of Indiana and H. Irene Husband of Mt. Pleasant.

Coming Meetings

New York State Coal Merchants' Association. Annual convention, Sept. 10-12, at Richfield Springs, N. Y. Executive Secretary, G. W. F. Woodside, Arkay Bldg., Albany, N. Y.

Association of Iron and Steel Electrical Engineers. Annual meeting at Philadelphia, Pa., Sept. 14-19. Secretary, John F. Kelly, Empire Bldg., Pittsburgh, Pa.

National Safety Council. Annual meeting Sept. 28 to Oct. 2, at Cleveland, Ohio. Managing Director, W. H. Cameron, 168 No. Michigan Ave., Chicago, Ill.

Tenth Exposition of Chemical Industries, Sept. 28 to Oct. 3, at Grand Central Palace, New York City.

Electric Power Club. Fall meeting at Briarcliff Manor, N. Y., Oct. 19-22. Secretary, S. N. Clarkson, B. F. Keith Bldg., Cleveland, Ohio.

American Welding Society. Fall meeting, Oct. 21-23, Massachusetts Institute of Technology, Boston, Mass. Secretary, M. M. Kelly, 33 West 39th St., New York City.

Canadian Institute of Mining and Metallurgy. Annual western meeting Nov. 3-5, Winnipeg, Manitoba, Can. Secretary, George C. Mackenzie, Drummond Bldg., Montreal, Que., Can.

American Society of Mechanical Engineers. Annual meeting at New York City, Nov. 30-Dec. 3. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Fourth National Exposition of Power and Mechanical Engineering, Nov. 30 to Dec. 5, at Grand Central Palace, New York City.

Coal Mining Institute of America. Annual meeting, Dec. 9-11, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., P. O. Box 604, Ebensburg, Pa.

Industrial Notes

A deal involving the purchase of the entire physical assets and property of a railroad was announced recently by the **Hyman-Michaels Co.**, of Chicago. The Kalamazoo, Lake Shore and Chicago Ry., being unable, successfully, to compete with motor transportation now operating parallel to its right of way, recently sought and was granted permission by the Interstate Commerce Commission to discontinue service and abandon its line. The Hyman-Michaels Co. took over the entire physical assets. The work of dismantling the road and sorting of materials has already begun. The line consists largely of No. 1 80 lb. ASCE section relaying rails, suitable for use in quarries, lumber camps and mines. Every piece of equipment is being rigidly inspected.

The Koppers Co. of Pittsburgh, Pa., was given the contract for the construction of 77 additional byproduct coke ovens for the Inland Steel Co. at Indiana Harbor, Ind.

Recent Patents

Axle Counter for Mining Machines; 1,540,019. Arthur G. Kershaw and F. J. Raymer, London, England, assignors to the Union Switch & Signal Co., Swissvale, Pa. June 2, 1925. Filed Feb. 16, 1924; serial No. 693,401.

Miner's Cap; 1,540,345. Frank Kowasik, Hiawatha, Utah. June 2, 1925. Filed Oct. 29, 1923; serial No. 671,367.

Controller for Hoisting Engines; 1,540,631. A. E. Johnson, Denver, Colo. June 2, 1925. Filed Dec. 15, 1923; serial No. 680,876.

Hopper-Car Door; 1,540,850. Carl M. Luth, Wilkinsburg, Pa. June 9, 1925. Filed Oct. 8, 1923; serial No. 667,258.

Mine Cage; 1,541,144. Wm. G. Holmes, Danville, Ill. June 9, 1925. Filed Jan. 21, 1924; serial No. 687,455.

Coke Quenching and Loading Apparatus; 1,541,153. Heinrich Koppers, Essen-Ruhr, Germany, assignor to the Koppers Development Corporation, Pittsburgh, Pa. June 9, 1925. Filed July 5, 1921; serial No. 482,613. Renewed Mar. 9, 1925.

Mine-Car Loading and Haulage Means; 1,541,361. Wm. G. Knowles, Bessemer, Ala., assignor of one-half to Arthur T. Knolwes, Bessemer, Ala. June 9, 1925. Filed March 26, 1923; serial No. 627,929.